# WORLD OIL

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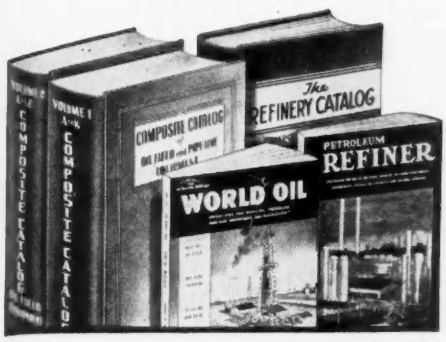
WORLD OIL and The COMPOSITE CATALOG
for the drilling-producing-pipe line industry

PETROLEUM REFINER and The REFINERY CATALOG
for the refining-natural gasoline industry



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CLINTON S. QUIN, JR., *Manager*



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# PLANS AND SPECIFICATIONS

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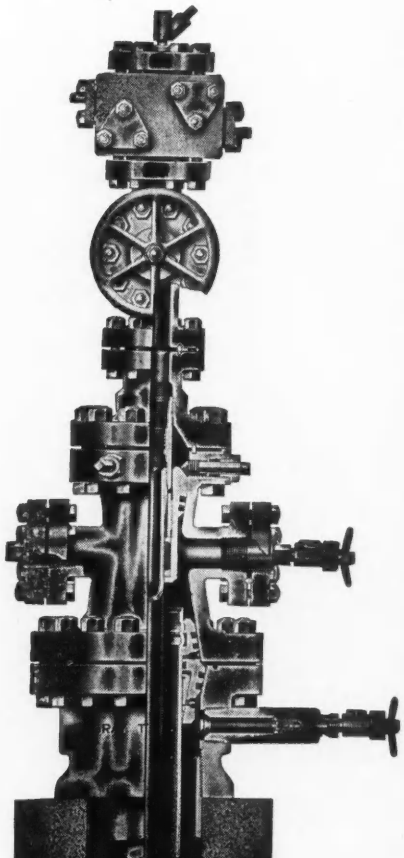

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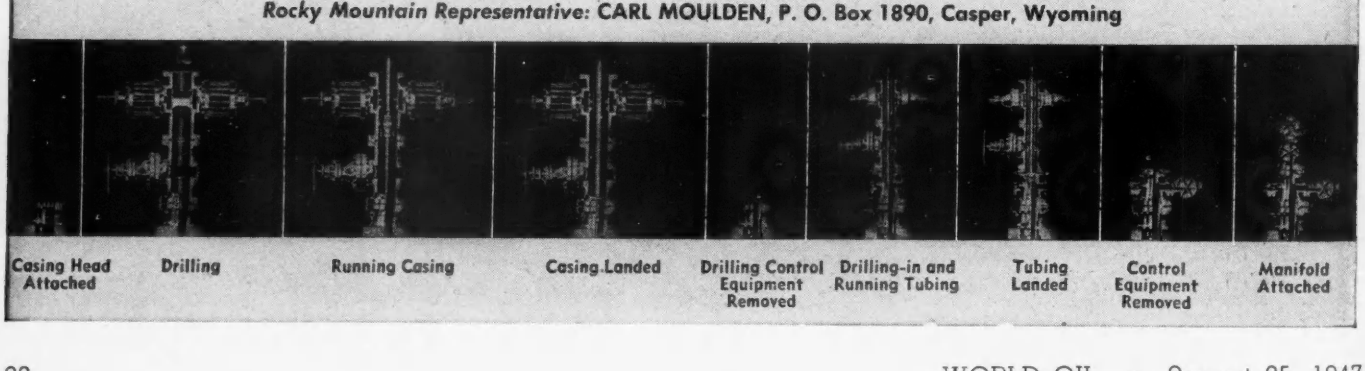


# THE WEEK'S NEWS

## Independents Look Toward Middle East After Organizing $100 Million Concern

Formation of the American-Independent Oil Company, a $100 million corporation created to engage in foreign petroleum operations, particularly in the Middle East, was announced last week in a move expected for some time as a logical step in the progress of world oil affairs.

The incorporators are a group of 11 independents engaged in the production, transportation, refining and distribution of petroleum in the U. S. The combined assets of this independent group total in excess of $1 billion.

Although sporadic and largely unsuccessful attempts have been made in years past by smaller operators to enter the foreign field, the launching of the new enterprise marks the first time in history that a large-scale, substantially financed program has been undertaken by independents in such operations, heretofore carried on almost exclusively by the larger units of the major oil companies.

### Davies Heads Group

President of the American-Independent Oil Company is Ralph K. Davies, wartime deputy petroleum administrator and former senior vice president of Standard Oil Company of California. Vice presidents are K. S. Adams, Phillips Petroleum Company, Sam B. Mosher of Signal Oil and Gas Company, and J. Howard Marshall, former chief counsel for PAW and president of Ashland Oil & Refining Company.

Among the 11 independents participating in the formation of the new company will be found those whose operations have fitted them for activity in every phase of industry operations. Several have had many years of experience in operating integrated companies, and others have had experience in coordinating the activity, of many separate organizations. Listed below are the 11 incorporators, in alphabetic order:

J. S. Abercrombie, Houston, producing, drilling, gasoline plant operation.

Allied Oil Company, Inc., Cleveland, producing.

Ashland Oil & Refining Company, Ashland, Ky., an integrated company.

Ralph K. Davies, San Francisco.

Globe Oil & Refining Company, Wichita, Kansas, refining.

Hancock Oil Company, Long Beach, Calif., an integrated company.

Honolulu Oil Corporation, San Francisco, producing.

Los Nietos Company, Los Angeles, producing and refining.

Phillips Petroleum Company, Bartlesville, Okla., an integrated company.

Signal Oil & Gas Company, Los Angeles, producing, marketing and natural gasoline manufacture.

Sunray Oil Corporation, Tulsa, an integrated company.

The directors of the new corporation are K. S. Adams of Phillips Petroleum, Vernon Barrett of Los Nietos Company,

K. S. Adams

Ralph K. Davies

J. Howard Marshall

Samuel B. Mosher

Jack Blalock with J. S. Abercrombie, L. A. Cranson of Honolulu Oil, Ralph Davies, Don Emery and Paul Endacott of Phillips, Russell H. Green of Signal, John W. Hancock of Hancock Oil, J. Howard Marshall of Ashland, A. C. Mattei of Honolulu, Sam N. Mosher of Signal, I. A. O'Shaughnessy of Globe, Frank Phillips, Will J. Reid of Hancock, W. W. Vandeveer of Allied and C. H. Wright of Sunray.

### Delegation to Leave

The Middle East definitely became the first aim of the new organization with developments during the first week of its formation. Announcement now has been made that a delegation of representatives of American - Independent Oil Company is scheduled to leave for the Near East within the next 30 days to further discussions already begun with the rulers of the "neutral zone" now administered jointly by the rulers of Kuwait and Saudi Arabia. Phillips, a leader in the formation of the independent enterprise, already had sent technicians to the area for studies of the potentialities of this area, and the organization has started preparation of bids for concession privileges on this million-acre tract. In this project the company will be in spirited competition with the larger international operators, several of whom are reported to have submitted bids to the ruler of Kuwait. At this time it is not clear whether the Kuwait ruler is empowered to close such a deal without the consent of King Ibn Saud of Saudi Arabia, the other claimant to the disputed territory.

In the meantime the interest of American-Independent in the independent kingdom of Yemen has become manifest with the entertainment by Phillips Petroleum Company and others of a newly arrived delegation from Yemen, headed by Prince Saif al-Islam Abdullah, with whom negotiations for oil lands already have been started.

With the sanction of the State Department, the party from Yemen were the guests of Phillips from the time of their arrival in the U. S., and were taken on a three-state tour of inspection which included properties of the various incorporators of American-Independent Oil Company.

According to representatives of AIOC the negotiations have not reached the monetary stage, but that this would likely be discussed at forthcoming meetings in the Near East. Included in the party were His Excellency Muhammad al-Amri, of Yemen, Hassan Baghdabi, Bey, advisor; Hussein Abdullah, advisor; and George Wakim, an American-educated countryman of the Prince, who served as interpreter.

Yemen, which lies on the Red Sea at the southwest corner of the Arabian Peninsula, has been the object of speculation in months past, as interest has been shown by several American operators. Preliminary geological work has indicated that it should be favorable oil territory, although on the basis of present known work, apparently without the rich potentialities of the neutral zone between Kuwait and Arabia.

Incorporated in Delaware, the new company has an authorized capital stock of 1 million shares of no-par value, of which 100,000 are paid-in at the rate of $100 per share. Offices will be in Washington, D. C. and San Francisco.

Concerning its program, Davies issued the following statement:

"Everyone recognizes that the security and well-being of the U. S. depends upon ample and continuing supplies of petroleum products. Everyone recognizes, also, that there can be no assurance that all of these necessary supplies can be derived wholly from domestic sources.

"At this very moment, petroleum products are in short supply in the U. S. and have been for months. For the first time in our history, we have become a net importer of oil.

"Whether this is a temporary situation, which will be overcome when steel and transportation become easier, is something that no one can know. But, what everyone does know is that the demand, both domestically and woldwide, has increased and will continue to increase.

"It is therefore obviously in the national interest that we have access to oil resources beyond our shores, so that we shall be able to supplement our domestic supplies whenever they cannot efficiently meet demand.

"To this task, the American-Independent Oil Company proposes to devote its efforts. In so doing, it recog-

nizes that the launching of a large-scale, long-term foreign oil program is something of a precedent for independent operators.

"Heretofore, this field has been developed almost entirely by major oil companies. Foreign ventures by others have been relatively insignificant.

"Nevertheless, we believe that the interest of the American consumer will be best served by the active, substantial and permanent participation of American independent oil operators in the international field. Certainly, all will agree that the consumer is in a more favorable position when there is competition by the many, rather than control by the few, however well-intentioned and beneficient.

"We believe that the major concession-holders will themselves benefit, particularly from the standpoint of their relationships with the public and the government, by the introduction of wholesome rivalry into areas where control is not concentrated.

"Far more important, of course, than any benefits which may accrue to the petroleum industry, are the advantages in the public interest. Before a great many years, more oil probably will be produced abroad than in the U. S. even if our present high rate of more than 5 million barrels daily should be substantially increased. To deny the benefits of this foreign production to American consumers, to supplement our domestic supply, might subject them to the payment of unduly high prices for products. To deny foreign crude to domestic refineries might force abroad an increasing amount of the refining of foreign crude, and thereby materially lessen our exports.

"The American-Independent Oil Company, therefore, intends to devote its energies to strengthening the American position abroad, and to do so in the American tradition of free, competitive enterprise, always mindful that, in dealings with an indispensable natural resource, its first duty is to serve the national interest."

# Lack of Federal Control over Producing And Gathering Gas Is Admitted by FPC

Administrative steps "to relieve any existing uncertainty that it seeks jurisdiction over independent operators engaging solely in production or gathering of natural gas for sale at arm's length to interstate pipe line companies" were taken last week by the FPC in an order amending its general rules of practice and procedure. The action was not unanimous, however. Commissioner Draper dissented on the grounds that the Commission was being too liberal in the light of the court decision in the Interstate case.

The order of the Commission not only recognized the lack of authority for federal regulation of production and gathering, including the field sale of gas, but it also recognized the need for clarifying this issue by legislative action of Congress rather than by administrative rule. It was issued at this time because Congress has not yet reaffirmed the exemption by amending the act, and it is the Commission's intention, the order stated, to continue to recommend to Congress that it take appropriate clarifying legislative action.

The order supplements the Commission's General Rules of Practice and Procedure by the addition of the following rule which becomes Part 03—Substantive Rules, General Policy and Interpretations of Subchapter A—General Rules, Chapter I of Title 18, Code of Federal Regulations. It reads in full as follows:

"Section 03.79—Jurisdictional Status of Independent Producers and Gatherers. The Federal Power Commission is of the opinion that it was the intent of the Congress that the control of production or gathering of natural gas should remain a function of the states and that the Natural Gas Act should not provide for regulation of those subjects.

"For the purpose of administering the Natural Gas Act, the Commission will construe the exemption contained in Section 1(b), to the effect that the provisions of the act shall not apply to the 'production or gathering' of natural gas, as including arm's length sales of natural gas by independent producers and gatherers, made during the course or upon completion of production and gathering. The Commission, consistent with this construction, will not assert jurisdiction over such producers and gatherers who might be subject to jurisdiction solely because of such sales."

The rule became effective August 15.

In its order accompanying the rule, the Commission briefly outlined events leading up to the adoption of the rule, recalling that following issuance of the staff report in the Natural Gas Investigation (Docket No. G-580) last March considerable uncertainty arose as to the Commission's interpretation of Section 1(b) with reference to the status of independent producers and gatherers.

At recent Congressional hearings on various bills for amending the Natural Gas Act, the order recalled, the Commission stated its view that independent operators who produce or gather natural gas and sell it at arm's length to natural gas companies transporting such gas in interstate commerce were exempt from the provisions of the Natural Gas Act. Later, the decision of the Supreme Court in Interstate Natural Gas Company, Inc., v. Federal Power Commission became the basis for diverse interpretations and agitations by interested parties as to its implications regarding the jurisdictional status under the Act of independent producers and gatherers.

Industry's reaction to the new rule, as expressed by Russel B. Brown, general counsel of the IPAA, was that it was a step in the right direction. He said it was of some significance and most encouraging that the Commission now advocates, as a matter of principal, that as to production and gathering the Natural Gas Act should be clarified by legislative action in order to remove the uncertainties that are prevalent today and are operating to hamper the supplying of gas to consumers.

He took note of the fact, however, that the rule does not include precise definitions of production, gathering, transportation, or sale, which are necessary if a producer and gatherer is to be able to make a self-determination of his status under the Act. Under the rule, as with any administrative rule, he said, the individual producer or gatherer will continue to be faced with the problem, involving expense and unavoidable delay, of obtaining from the FPC an individual ruling before he can definitely know his status under the act.

# Texas Allowable Hiked 29,691 Barrels

The Texas Railroad Commission has issued its September proration order fixing a net allowable of 2,534,393 barrels daily. This is 29,691 barrels more than was allowed during August.

Southwest Texas was increased 5531 barrels daily, the Gulf Coast 11,289 barrels, East Central Texas 3288, West Central Texas 1105, and West Texas is up 12,074 barrels. East Texas was cut 4274 barrels.

The state generally will produce 27 days. West Texas District 8 is permitted 25, East Texas 21, and the Panhandle is exempt.

The Commission estimates that operators will produce 7.61 percent less oil than is allowed, which will mean actual production of 2,341,526 barrels. To this will be added 191,545 barrels of distillate and natural gasoline, bringing the state total to 2,533,071 barrels of all oils. The Bureau of Mines forecast of demand for Texas crude during September is 2,290,000 barrels.

Nominations totaled 2,648,900 barrels —up 88,606 over June, July and August. Increases amounted to 8220 barrels for Southwest Texas, 2675 for East Texas (outside), 8958 for West Central Texas, 76,936 for West Texas, and 5907 for North Texas. Cuts amounted to 12,307 for East Texas and 2071 for the Panhandle. Present production averages 2,306,050 barrels.

In view of the 5.64-pound drop in weighted average bottom hole pressure in the East Texas field during July, H. P. Nichols of the East Texas Oil Association requested one additional shutdown day during September at the statewide hearing. On August 1, the pressure stood at 1007.21 pounds, for a total drop from the first of the year of 8.99 pounds. The daily average oil allowable during July was 325,867 barrels.

## *Pipe and Price Will Cure Industry's Ills—Thompson*

There is nothing wrong with the oil-producing industry that pipe and price won't cure. This opinion was expressed last week in a statement issued by Texas Railroad Commission Chairman Ernest O. Thompson.

"Texas is presently producing 2,283,500 barrels of oil daily," he declared. "This exceeds the certified estimate of market demand of the Bureau of Mines, which was 2,255,000 daily.

"Texas is now and always has produced a little more oil than the Bureau of Mines estimated as needed to fill the demand.

"Crude stocks are higher today than they were a year ago, being 231 million barrels. At the close of the war crude stocks were 211 million barrels. And stocks are 10 million barrels higher than a year ago. So we have built up crude stocks steadily in the last two years.

"California is producing 920,800 barrels of oil daily. This amount of oil production has proven ample to supply the West Coast. There is no oil shortage west of the Rockies.

"The Rocky Mountain area, consisting of Colorado, Wyoming, and Montana is producing as follows:

| | |
|---|---|
| Colorado | 40,370 barrels daily |
| Wyoming | 116,000 barrels daily |
| Montana | 22,950 barrels daily |
| Total | 179,320 barrels daily |

"This amount of oil and the refining capacity in these three states has proven ample to fill all demands and to furnish products for shipment elsewhere.

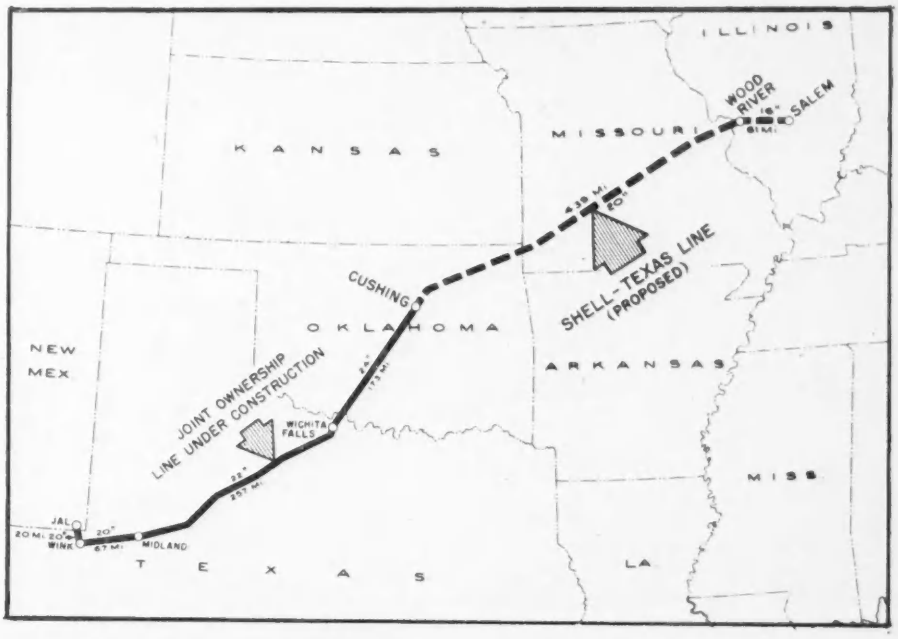
"The place where there have been some 'spot' shortages is in the Middle West, called District Two. It extends northward from Tennessee to the lakes, and from Ohio westward to the western borders of the Dakotas.

"Local oil production in that district dropped from 1,200,000 barrels daily in 1941 to 950,000 barrels daily as of today.

"Furthermore, consumption in District 2 has increased 375,000 barrels daily since 1941; so the transportation problem has been a tough one in that area. This has put a drain on finished products stocks in this district. Of course, this all will be worked out when the new pipe lines are completed from West Texas into that area. But for the present year and the winter ahead, every part of the country is going to have to ship products into the area around Chicago and Detroit."

## *19-Mile, Ten-Inch Michigan Line Planned by Panhandle*

Michigan Public Service Commission has approved a permit to Panhandle Eastern Pipe line Company for construction of 19 miles of ten-inch gas transmission line from the new Howell field. The line will tie into existing lines serving southern Michigan. Five completed wells in the field, producing from the Salina formation, have an estimated daily withdrawal capacity of 10 to 15 million cubic feet.




# 500-Mile Oklahoma-Illinois Pipe Lines Planned by Shell and Texas Companies

A 20-inch pipe line from Cushing, Okla., to Wood River, Ill., and a 16-inch line from Wood River to Salem, Ill., which will cost in excess of $22 million, are planned by Shell Pipe Line Corporation and The Texas Pipe Line Company. The lines will be approximately 500 miles long, with an estimated capacity of 150,000 barrels daily.

The 20-inch segment will be jointly owned by Shell Pipe Line Corporation and The Texas Pipe Line Company in undivided interests of 52 percent and 48 percent, respectively. The 16-inch portion will be 100 percent owned by The Texas Pipe Line Company.

The new line will provide transportation beyond Cushing for part of the throughput from the recently-announced 20-22-24-inch line now under construction from West Texas-New Mexico to Cushing as a joint ownership project in which the two firms are participants.

The new line, which will be constructed and operated by Shell, will parallel its existing double ten-inch line between Cushing and Wood River. It will be 439 miles long and will have five modern pump stations located at station sites common to Shell's existing stations. The 20-inch section will terminate at Shell Oil Company's refinery at Wood River and the 16-inch segment, 61 miles in length, will connect with existing facilities of The Texas Pipe Line Company of Salem, Ill.

## *Standish to Hike Capacity Of New Mexico-Texas Line*

Standish Pipe Line Company, transportation unit of Phillips Petroleum Company, is scheduled to increase the capacity of its combination six- and eight-inch trunk line from West Texas and New Mexico to Borger by 3000 barrels to 23,000 barrels daily about September 1 through the completion of a new booster station in Gaines County, and the installation of a larger pumping unit at Fullerton station.

This line is currently handling 8000 barrels of crude and 12,000 barrels of natural gasoline daily. Surplus crude deliveries to Borger are relayed by tank cars to Oklahoma City, where the oil enters Standish's trunk line that supplies Phillips' Kansas City refinery.

## *United Gets Right-of-Way for 36-Mile Mississippi Line*

United Gas Pipe Line Company has acquired right-of-way for the immediate construction of 36 miles of six-inch natural gas line to extend from its Gwinville field, Mississippi, gathering system to a point near Brookhaven, where connection will be made with its Jackson-McComb six-inch transmission line.

## *Pressure Tests Started on 70-Mile New Mexico Line*

Stanolind pipe Line Company is starting pressure tests on its 70-mile, eight-inch extension of its West Texas-Oklahoma 16-inch carrier from the Slaughter field, thence west to the Cap Rock field, situated on the Lea-Chaves County line, New Mexico. Smith Contracting Company completed welding and back filling on August 19.

This 80-well field has been subjected to pipe line proration for several years due to its local refinery market outlet being unable to absorb the allowable, and accumulated back allowable amounting to 48,960 barrels during May.

# Desanding Drilling Fluids

By J. E. KASTROP
Staff Writer

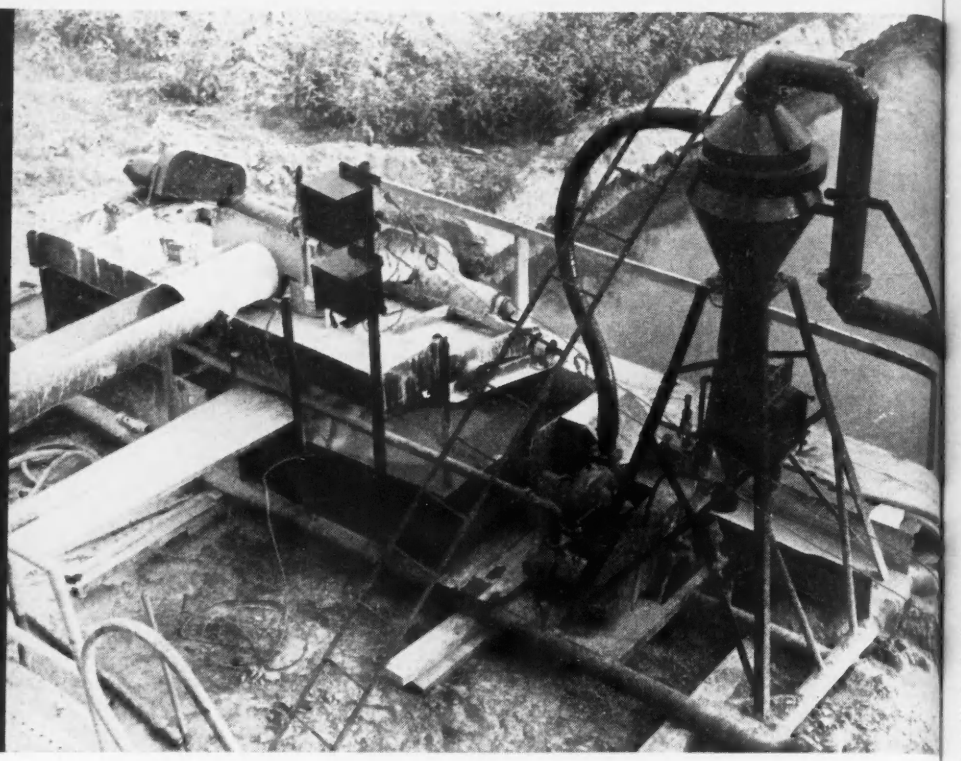


**Figure 1. Centrifugal desander unitized on skid with shale shakers to facilitate handling during rig moves as well as to save time in setting up. Mud drops through the screens into a metal box and floods the suction of the centrifugal pump. Sand falling from the desander discharge nozzle is jetted off while the mud is drawn off into the mud ditch.**

**MODERN ROTARY drilling requires closer tolerances in the physical characteristics of the drilling fluid, particularly as well depths increase when the trend indicates. With such qualities of the mud as filter cake thickness, water loss, and viscosity affected by the presence of sand, methods must be provided to remove as much of these abrasives as is practical. The centrifugal desander, having no moving parts, has provided the industry with a means of bettering the quality of drilling mud by taking out much of the sand. Other advantages result with sand removed from the mud. Wear of the circulatory system due to abrasion is lessened, particularly in pumps and jets. Two installations described meet the need of desanding in the West Coast and Gulf Coast areas.**

EXCESSIVE quantities of sand in oil well drilling fluids have troubled the oil man since the days of Spindletop when water and mud were first mixed and used as a means of removing formation cuttings. Not only does sand affect the properties of drilling muds, but when carried in the mud system it also becomes a destructive agent which erodes mud pump valves, valve seats, liners, pistons, rods, packing glands, pipe fittings, and causes excessive wear to the entire mud circulatory system.

### Decade of Progress

Great strides have been made in the past ten years in the technology of oil-well drilling fluids. The characteristics of drilling mud which affect their use as an agent in removing formation cuttings have been precisely defined and investigated. These investigations have revealed that minute particles of silica or sand have marked effect on some of these characteristics. One very definite effect may be found in the filter cake which is deposited on the wall of the bore hole. Sand tends to increase the thickness of this cake, thereby reducing the diameter of the hole. With small, solid grains of sand in the filter cake on the walls of the hole, the amount of water loss from the mud into the formations is greater than in the case where little or no sand is present. Other effects may be observed to a lesser degree in the specific gravity and shear strength of the drilling fluid.

In many of the fields west of the Rocky Mountains, sand has plagued the mud-treating program throughout the entire depth of the well. With large quantities of sand in the drilling fluids, a constant desanding process had to be employed to remedy the costly menace imposed by these abrasives. One method developed that has proven efficient on the West Coast and in other areas as well is the centrifugal desander illustrated. It has found particular application in the Texas and Louisiana Gulf Coast areas where the unconsolidated Miocene formations contribute a continuous load of sand in the outflowing mud stream. As these surface sands are encountered soon after spudding, it is desirable that desanding equipment be rigged up and placed into operation soon after drilling is commenced. As the drill penetrates the deeper formations where fewer unconsolidated sands are found, the mud desanding requirements are not as severe.

### Principle of Operation

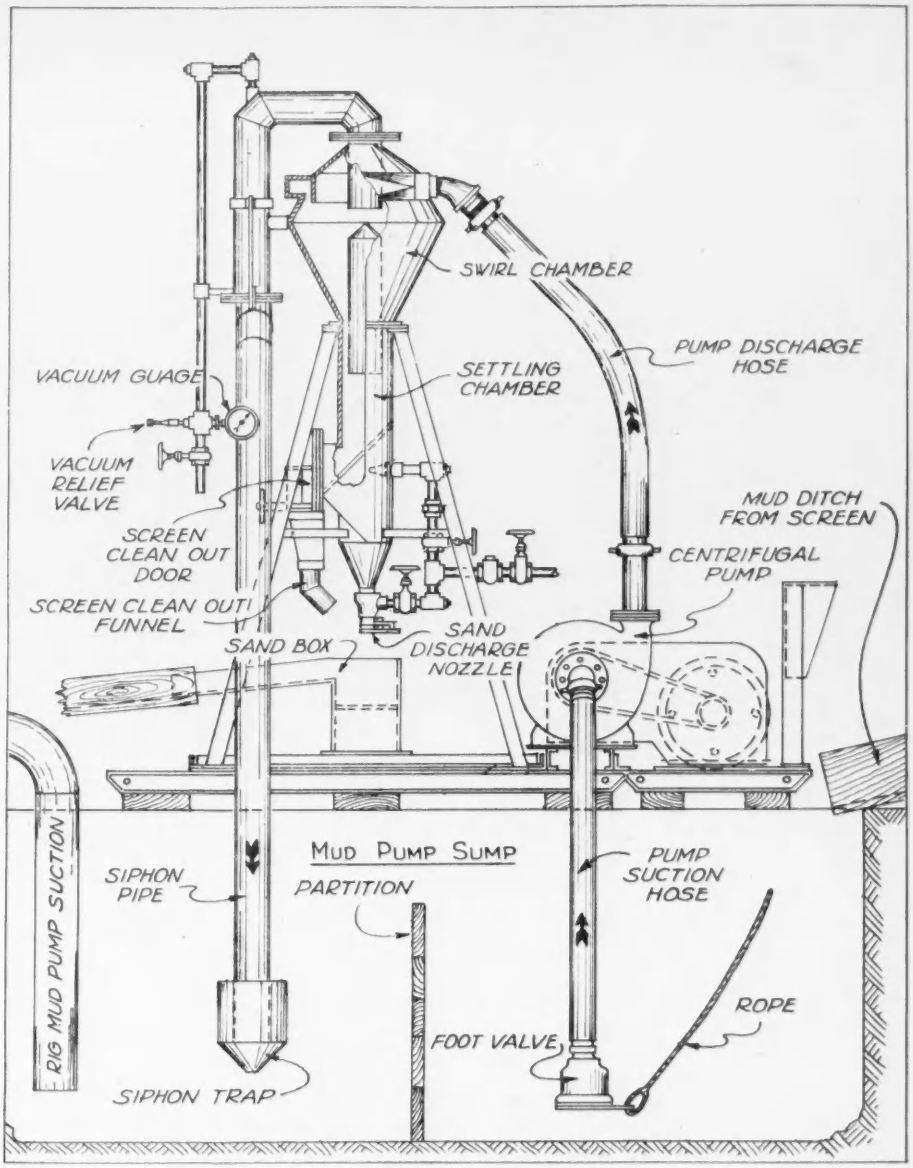
The desander affects a separation of sand from the drilling fluid by causing the sand-laden fluid to swirl at high velocities inside a volute or cyclone chamber. Because of their greater mass, the sand particles accumulate at the boundaries of the volute and settle to the bottom. The lighter constituents flow to the center of the volute, then are drawn off at the top and piped into the mud sump for re-use.

Sand-laden fluids are taken either directly from the shale shaker discharge

or from the settling pit and pumped into the desander through a tangential port near the top of the volute. A specially designed centrifugal pump independently driven or a standby positive-displacement mud pump may be used for this purpose. Fluid enters the desander at high velocity through a four-inch line and begins a swirling motion in the volute. Sand particles settle down the sides of the cone into the settling chamber which contains a scalping screen. Function of the screen is to catch any large particles which might get into the fluid and plug the sand discharge nozzle. A cleanout door, made into the settling chamber, provides a means of cleaning the screen periodically.

Water enters the settling chamber at two points: through a jet opposite the cleanout door, and through the water control valve at the discharge nozzle. In operation, water is continuously added at the discharge nozzle to the accumulated sand to facilitate its discharge. The discharge nozzle contains several different-sized orifices through which the sand passes. The size selected is dependent upon the amount of sand being removed, since it is desirable to maintain a hydraulic balance between the column of falling sand and the discharging mud. Desanded mud is drawn off the top at the center of the volute through a six-inch siphon line which discharges into the mud sump.

This six-inch discharge line siphons off the desanded mud by virtue of the falling mud in the siphon line. A siphon trap placed at the discharge end of the six-inch siphon pipe prevents complete discharge of the line in case the flow of fluids into the unit is disrupted. A vacuum relief valve is provided to adjust the vacuum within the desander to about 11 inches of water during steady operation.




**Diagrammatic sketch of the centrifugal desander showing cutaway of the swirl chamber and volute where the sand-laden fluids enter the unit. This type installation has been used on many West Coast locations where formations feed a continuous stream of sand into the mud system during most of the drilling program. The unit is set up adjacent to the mud pump sump, and operates independently of the mud pumps. Its operation is also unaffected by the rate of circulation of the drilling fluid.**

### Installation

Method of installing the desander at the location is illustrated in the drawing. This follows the typical West Coast setup. The mud sump is partitioned down the center with timber planking. Discharge from the shale shakers flows into one side of this pit where the fluids are picked up by the desander pump. After the sand is removed from the fluid, the clean mud is discharged into the other side of the mud pump sump where it is picked up by the mud pumps and circulated through the hole. Such an installation permits continual operation of the desander even when the mud pumps are shut down. The fluids are recycled within the sump to produce a sand-free mud. Efficient operation of the desander will remove sand grains as small as 200 mesh.

Figure 1 is an installation used in the Gulf Coast. The desander has been unitized on the same skid with the shale shaker to simplify transportation and erection. Little additional effort is required to place the unit in operation after the shale shakers are installed, and the desanding process may begin as soon as the shale shakers are placed in operation. In this particular installation, the centrifugal pump is flooded as long as sufficient fluid flows through the shale shakers. However, when the discharge of fluids from the well is stopped for an extended period it is necessary to shut down the desander.

With the increased knowledge of drilling fluids and their function in drilling oil wells, closer limits are required in mud characteristics. Some sand is permissible in small quantities throughout the drilling of the well (actually, it is impractical to remove every minute particle of silica), but as the hole becomes progressively deeper, less sand can be tolerated in the mud. Though small amounts of sand can be permitted in the mud, its presence does increase the wear on equipment handling the sand-laden fluids. With means of controlling the sand content of a drilling fluid, better hole conditions should result, as well as increased life of equipment used to handle the drilling fluids.

By PARK J. JONES
Consultant

# Condensate PRODUCTION AND CYCLING

## Part 3

### Invasion by Injected Gas

THE acre-feet of pay invaded by injected gas divided by the acre-feet to be invaded is the invasion factor. The influence of per-bed pay, thickness and permeability on invasion factors for a one-well system which has one injection and one producing well are considered. The well-pair is located remote from other wells, a water contact or structural and stratigraphic boundaries. The shape and size of the invasion pattern for a one-well system plus the data on the unit injection circle are reviewed here. These basic data will be extended in later articles to reservoirs in which there are impermeable boundaries, a water contact, interference between several wells and variable per-bed depletion rates.

#### Breakthrough Recovery

Consider the displacement of a rich gas by injected dry gas. Let the displacement be at any pressure for a wet gas and above dew-point pressure for a retrograde gas. Under these conditions, the composition of production is uniform until dry gas appears in production. The cumulative recovery at the time dry gas reaches a producing well is called the breakthrough recovery and is defined by

$$C = p(ah)m \qquad (1)$$

where

- ah = acre-feet of pay invaded by dry gas
- p = in place rich gas, cubic feet per acre-foot
- m = displacement factor
- C = cumulative recovery, cubic feet.

The displacement factor is the fraction of in place rich gas displaced from the acre-feet of pay invaded by dry gas.

Consider a reservoir having ah acre-feet and p cubic feet of rich gas per acre-foot. Denote pah by unity. Then the breakthrough recovery C expressed as a fraction of the in place gas is given by

$$C = Im \qquad (2)$$

where I is the invasion factor, that is, the acre-feet of pay invaded by dry gas at breakthrough expressed as a fraction of the acre-feet of pay to be invaded by dry gas. For instance, if 50 percent of the acre-feet in a reservoir were invaded at the time dry gas appears in production and 90 percent of the rich gas within the invaded acre-feet were displaced by dry gas, the breakthrough recovery would be 45 percent of the in place rich gas. The breakthrough liquid recovery would also be 45 percent of in place butanes plus.

#### A Radial Injection System

Consider an injection well completed in a pay which has several intervals. Let $h_i$ be the completion in the ith interval and $K_i$, the permeability for the reservoir-well system in the ith interval. Let the location of the injection well be remote from any structural or stratigraphic impermeable boundaries and also from any producing wells and other injection wells. Under these conditions, the rate of gas injection $Q_i$ into the ith interval is defined by

$$Q_i = \frac{305(hK)_i(P^2_b - P^2_r)}{\mu TZ \log \frac{D}{r}} \qquad (3)$$

where

- D = radial distance advanced by injected gas, feet
- $h_i$ = completion in ith interval, feet
- $K_i$ = permeability for ith interval, darceys
- $P_b$ = bottom-hole injection pressure, psia
- $P_r$ = reservoir pressure, psia
- $Q_i$ = rate into ith interval, cubic feet/day
- r = radius of injection well, feet
- T = absolute reservoir temperature, °R
- Z = compressibility factor for injected gas
- $\mu$ = viscosity, centipoises
- log = common logarithm.

Intake capacity varies logarithmically with the distance advanced by injected gas. So the influence of log D/r on the relative intake capacity as between intervals is negligible. Hence the relative volume $V_i$ of gas injected into the ith interval is given by

$$V_i = \frac{(hK)_i}{\Sigma(hK)_i} \qquad (4)$$

Other things being equal, the distance advanced by dry gas is the greatest in the interval having the highest permeability. Denote this interval by j and the relative volume injected into the j interval by unity. Then

$$V_j = \frac{(hK)_j}{\Sigma(hK)_i} = 1$$

and

$$V_i = \frac{(hK)_i}{(hK)_j} \qquad (5)$$

Let $D_i$ equal the radial distance advanced by dry gas in the ith interval. The acre-feet of pay occupied by dry gas is proportional to $hD^2/m$ and

$$V_i = \frac{(hD^2/m)_i}{\Sigma(hD^2/m)_i} \qquad (6)$$

where m is the displacement factor, that is, the fraction of rich gas displaced by dry gas from the acre-feet of pay invaded by dry gas. For the j interval

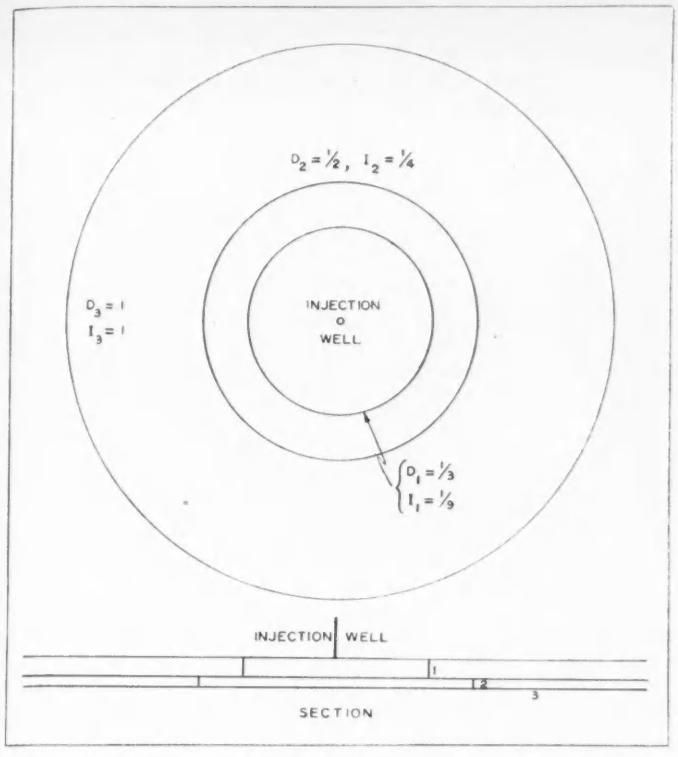



**Figure 3-1. Distance $D_1$ advanced by dry gas and per-intreval invasion factor $I_1$; the invasion factor for the three intervals is 0.368.**

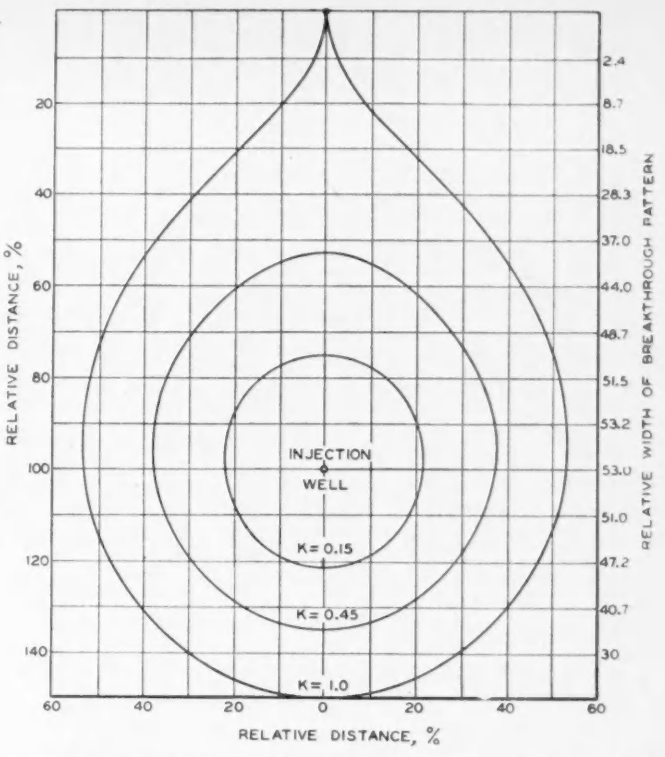



**Figure 3-2. The 360-degree invasion pattern vs. permeability ratio K (After Muskat).**

$$V_j = \frac{(hD^2/m)_j}{\Sigma(hD^2/m)_i} = 1$$

and

$$V_i = \frac{(hD^2/m)_i}{(hD^2/m)_j} \qquad (7)$$

Upon equating equations (5) and (7), we have

$$\frac{(hK)_i}{(hK)_j} = \frac{(hD^2/m)_i}{(hD^2/m)_j}$$

But the invasion factor $I_i$ for the ith interval is proportional to the square of the distance $D^2_i$ advanced by dry gas in the ith interval. Hence,

$$I_i = D^2_i = \frac{(mK)_i}{(mK)_j} \qquad (8)$$

that is, the per-interval invasion factor is equal to the ratio of permeabilities corrected by the ratio of displacement factors.

The per-interval relative distance advanced by dry gas is given by

$$D_i = \left[\frac{(mK)_i}{(mK)_j}\right]^{\frac{1}{2}} \qquad (9)$$

that is, the distance advanced by dry gas is proportional to the square root of permeability ratios corrected for the ratio of displacement factors. This correction is nominal when the distance advanced by dry gas is great enough. Hence, the approximate per-interval radial distance advanced by dry gas varies as the square root of permeability ratios. The approximate per-interval invasion factor is equal to the ratio of permeabilities.

The radial invasion factor I for all intervals combined is equal to the sum of the per-interval invasion factors weighted for pay thickness. Thus

$$I = \frac{\Sigma h_i I_i}{\Sigma h_i} \qquad (10)$$

*Example 1.* Estimate the per-interval invasion factor $I_i$ for three intervals and the invasion factor I for the three intervals combined when the pay thickness and permeability are as follows:

| Interval | 1 | 2 | 3 |
|---|---|---|---|
| Pay thickness, feet | 20 | 10 | 10 |
| Permeability, mds | 400 | 900 | 3600 |

On the basis of uniform displacement factors $m_1 = m_2 = m_3$, we have: $I_1 = 400/3600 = 1/9$, $D_1 = 1/3$; $I_2 = 1/4$, $D_2 = 1/2$ and $I_3 = 1$ and $D_3 = 1$.

Figure 3-1 illustrates the foregoing example. The distance advanced by dry gas in the top interval is only one-third of the distance advanced by dry gas in the bottom interval. The corresponding invasion factor for the three intervals combined is given by

$$I = \frac{1}{40}\left[20\left(\frac{1}{9}\right) + 10\left(\frac{1}{4}\right) + 10(1)\right] = 0.368$$

The acre-feet of pay invaded by dry gas is only 36.8 percent of the acre-feet of pay that could be invaded by uniform rates of advancement in all intervals. This also means that the duration of gas injection is only 36.8 percent of the time for uniform rates of advancement in all intervals.

The invasion factors will now be estimated on the assumption that the dis-

## *About the Author*

PARK J. JONES received his Bachelor of Science Degree in Petroleum Engineering and Geology from the University of California in 1931. He also did graduate work in petroleum engineering and geology. With this academic background he started to work in the oil fields. His first job was hoeing weeds on a town lot lease in California. This was followed by work as a roustabout, roughneck, junior engineer and finally engineer. He worked in fields in California, New Mexico, Texas, Louisiana, Oklahoma, Illinois and Colorado. During the past few years he has devoted considerable time to cycling and the production of condensate in Texas and Louisiana. This work has been widely recognized. By request he has conducted classes within and outside his company for those especially interested in production engineering practices.

He has been in consulting work, specializing in all phases of production since August, 1944.

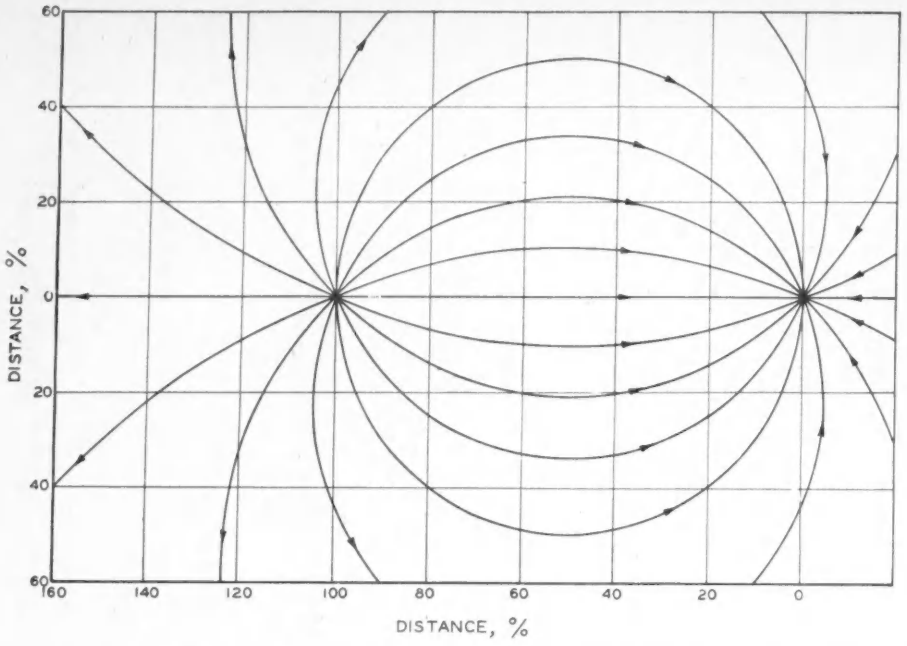



**Figure 3-3. Illustrating displacement lines for a one-well system remote from boundaries.**

placement factors are equal to 85, 90 and 95 percent of the in place rich gas.

| Interval | 1 | 2 | 3 = j | Total |
|---|---|---|---|---|
| $h_i$ | 20 | 10 | 10 | 40 |
| $K_i$ | 400 | 900 | 3600 | |
| $m_i$ | 0.85 | 0.90 | 0.95 | |
| $(mK)_i$ | 340 | 810 | 3420 | |
| $I_i = D^2_i$ | 0.0994 | 0.2368 | 1.000 | |
| $D_i$ | 0.315 | 0.487 | 1.000 | |
| $h_i I_i$ | 1.988 | 2.368 | 10.000 | 14.356 |
| I | | | | 0.359 |

The invasion factor corrected for variable displacement factors is 35.9 percent of the acre-feet that would be invaded if permeability were uniform.

### A Linear Injection System

Consider an injection well completed in a pay that has several intervals. Let there be linear boundaries common to all pay intervals at a distance W/2 from the injection well so that the advancement of injected gas is essentially linear. For this condition, the per-interval invasion factor is given by

$$I_i = L_i = \frac{(mK)_i}{(mK)_j} \qquad (11)$$

where $L_i$ is the linear distance advanced by dry gas in the ith interval.

The linear invasion factor I for all intervals combined is defined by

$$I = \frac{\Sigma h_i I_i}{\Sigma h_i} \qquad (12)$$

where $I_i$ is given by equation (11). Aside from displacement factors, the per-interval invasion factor and the relative distance advanced by dry gas is equal to the ratio of permeabilities. Equations (11) and (12) are the same as equations (8) and (10). However, the distance advanced by dry gas in a linear system varies directly with permeability ratios.

### The Invasion Factor and Injection Circle

Consider a radial reservoir for which the pay thickness is h feet. Separate the reservoir into intervals of one-foot pay thickness. Let R be the distance from the center of the reservoir to the productive limit for a given interval. The invasion factor $I_i$ for the ith interval relative to breakthrough of dry gas into a centrally-located producing well is defined[1] by

$$I_i = \frac{N}{N+2}\left(\frac{D}{R}\right)^2_i \qquad (13)$$

where N is the number of uniformly-spaced injection wells located on a circle of radius D and D/R is less than unity.

### One-Well System

The pay intervals in a reservoir vary as to permeability, thickness and areal extent. Consider one injection well and one producing well. Denote the distance between the wells by unity. Let the location of the wells be remote from other injection and producing wells and also from structural and stratigraphic boundaries and a water contact. Gas breaks through via the most permeable interval. Denote the permeability of the most permeable interval by unity and of the less permeable intervals by permeability ratios.

The shape of the invaded area in the most permeable interval is shown by the breakthrough contour in Figure 3-2. By equation (13), the area within the breakthrough contour is one-third of the area of a circle having a radius R equal to D, the distance between the injection and producing well. Such a circle is called a unit circle.

Suppose the well pair of Figure 3-2 are completed in three pay intervals. Let the permeability for the respective intervals be in the ratio 1.0:0.45:0.15. By equation (8), the invaded areas are the same as the permeability ratios aside from differences in displacement factors. The two inside contours of Figure 3-2 show the shape of the invaded areas for the two less permeable intervals.

Suppose the three pay intervals have the same thickness. Denote the invasion factor for the most permeable interval by unity. Then the invasion factor for the three intervals is given by $(1 + 0.45 + 0.15)/3$ or 0.533. The duration of gas injection prior to breakthrough would be 53.3 percent of what the breakthrough time would be if permeability and injection rate were uniform. Or, the acre-feet of pay invaded at breakthrough would be 53.3 percent of the acre-feet that could be invaded if permeability were uniform.

Suppose the pay thickness is 5, 10 and 20 feet respectively for the 1.0, 0.45 and 0.15 permeability ratios. By equation (10), the breakthrough invasion factor for the three intervals combined would be given $[5(1) + 10(0.45) + 20(0.15)]/35$ or 0.357. The acre-feet of pay invaded at breakthrough would be only 35.7 percent of the acre-feet that could be invaded if permeability were uniform.

On the other hand, if the pay thickness were 20, 10 and 5 respectively for the 1.0, 0.45 and 0.15 permeability ratios, the breakthrough invasion factor for the three intervals combined would be $[20(1) + 10(0.45) + 5(0.15)]/35$ or 72.1 percent. The acre-feet invaded at breakthrough would be 72.1 percent of the acre-feet that could be invaded if permeability were uniform.

### Displacement Lines

When the well-pair shown in Figure 3-2 is located at points remote from other wells and impermeable boundaries, any circle through the two wells is a path along which rich gas is displaced. Figure 3-3 shows some displacement lines for a one-well system. The producing well is located at the zero position and the injection well, at the 100 percent position. Breakthrough is along the line connecting the two wells.

An unbounded injection well is allocated 360 degrees. In the field, however, injection wells are bounded by structure, stratigraphy, a water contact or by the lines of symmetry between injection wells. A displacement line does not cross a line of symmetry and the latter is in effect a boundary. The degrees allocated to a bounded injection well may be small by comparison with the 360 degrees for an unbounded well. Bounded breakthrough patterns will be considered in the next article.

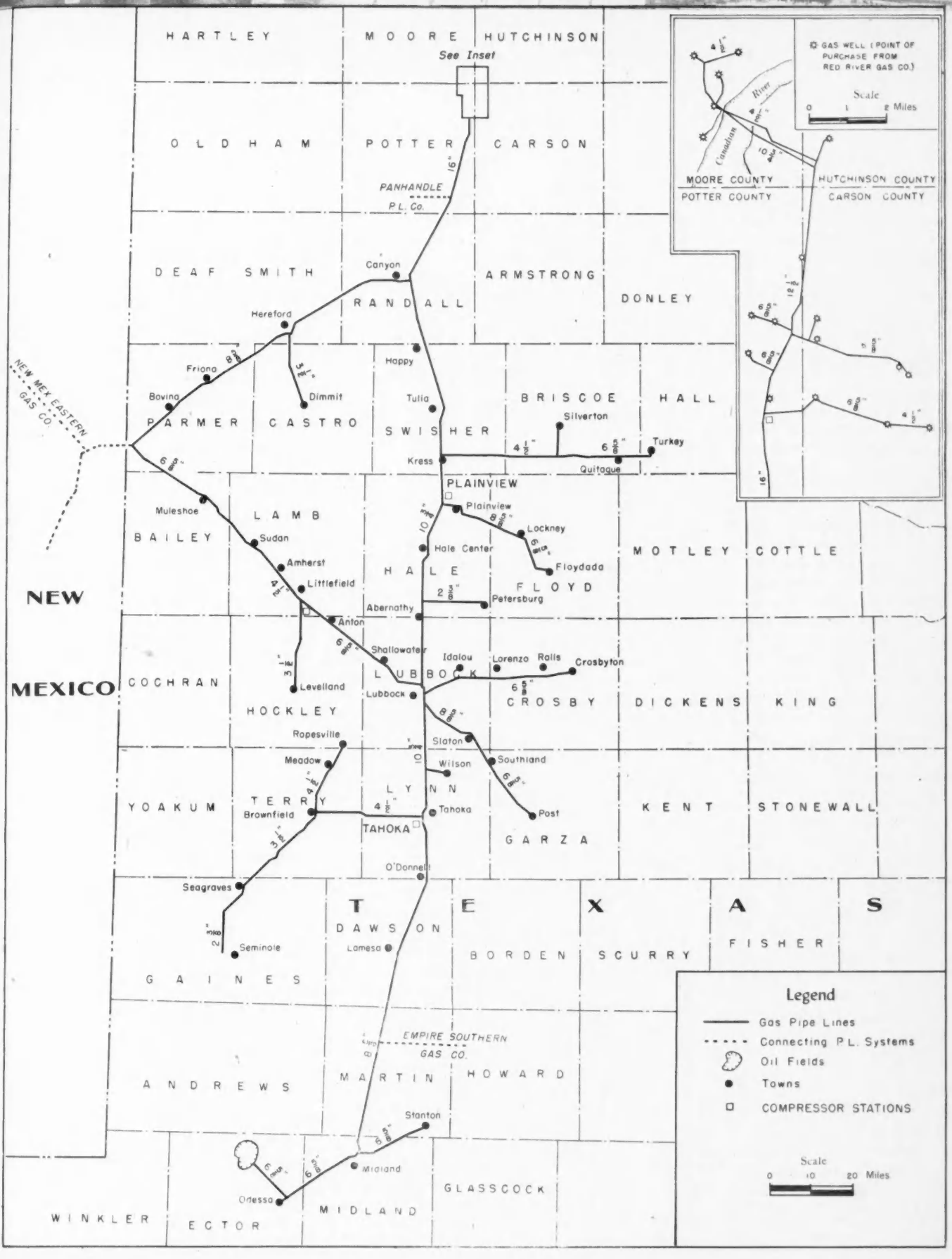
**REFERENCE**

[1] Jones, Park J., Vol. I, Mechanics of Production, Reinhold Publishing Corp., New York, 1946.

Pipe Lines of the U. S.

# West Texas Gas Company

29th of a Series



# Bacterial Release of Oil

## FROM OIL-BEARING MATERIALS

**Part 1**

By DR. CLAUDE E. ZoBELL

**THE ABILITY of certain bacteria to liberate oil from oil-bearing sands under certain conditions may point the way to a wider understanding of the phenomena underlying the accumulation or formation of hydrocarbons in reservoirs. Study of such bacterial action may point the way to ultimate recovery of a large portion of oil now left in place. The author describes the experiments carried out to define basic principles of bacterial action under conditions simulating those of the oil reservoir. The findings given offer basis for continuing research, and clarify existing limitations.**

PETROLEUM hydrocarbons, most of which are virtually insoluble in water, are generally rendered more susceptible to microbial attack by adsorbing them on sand, glass wool, asbestos fibres, diatomaceous earth, or other solid surfaces.[58] In experiments designed to compare the effectiveness of various inert absorbents for dispersing hydrocarbons in bacterial cultures, it was observed that certain bacteria liberated paraffin oil from sea sand and other solids on which the oil had been absorbed.[76] A film of oil appeared on the surface of mineral salts solution in which the bacteria were growing, whereas little or no oil separated from the adsorbents in uninoculated controls.

The liberation of oil was also observed from samples of Athabaska tar sand covered with nutrient solution in which sulfate-reducing bacteria were growing. Further experiments have conclusively demonstrated the ability of bacteria to liberate oil from oil-bearing sands under certain conditions, and a few observations have been made on the mechanism by which bacteria release oil from solids.[75] It is the purpose of this paper to summarize some of these observations.

### Experiments With Athabaska Tar Sand

Athabaska tar sand consists of an agglomeration of fine sand impregnated with a heavy, black, viscous tar, little or none of which is removed by water at ordinary temperatures. From 12 to 20 grams of crude oil or tar, having a density of about 1.12 (—5-degree API gravity), can be extracted per 100 grams of the tar sand with petroleum ether, pentane, carbon tetrachloride or similar solvents.

While testing samples of Athabaska tar sand for their effects on the growth of bacteria, it was noted that certain cultures released oil from the sand. The multiplication of sulfate-reducing bacteria in nutrient solution covering the tar sand in glass-stoppered bottles was accompanied by the gradual separation of oil or tar from the sand. Oil droplets, apparently buoyed up by adherent gas bubbles floated to the surface of the nutrient solution in which bacteria were growing. Most of the oil settled back in a viscous layer immediately overlying the sand, but some of the released oil remained in a film floating on the surface of the nutrient solution.

Irregular shaped lumps of the tar sand ranging from one-fourth to one-half inch in diameter were slowly disintegrated by the bacterial cultures. The free sand grains spread out in a layer on the bottom of the culture bottle. After several days incubation at 27° C. the tar sand changed in color from black to light gray, indicating that most of the tar had been removed from the sand. Little or no oil was released from similar samples of tar sand treated with sterile nutrient solution.

The approximate density of the oil liberated from tar sand was estimated by noting its behavior in salt solutions of various densities. For example, the film of oil which floated to the surface of nutrient solution prepared with sea water (density about 1.03) and remained at the surface probably had a density of less than 1.03. This was confirmed by sending a small sample of oil decanted from the surface of the nutrient solution to the Esso Laboratories where technologists, working under the supervision of Dr. W. J. Sweeney, found that the oil separated from Athabaska tar sand by bacteria had a density of approximately 1.0. This corresponds to ten API gravity and may be compared with —5 API gravity for the original crude.

It is not to be inferred that all of the oil released by bacteria from the tar sand was lighter than the original crude. The density of most of the oil or tar separated from the tar sand by bacteria ranged from 1.10 to 1.14, corresponding to —3 degree API to —8 degree API gravity.

### Composition of Nutrient Solution

In the intial experiments, samples of Athabaska tar sand were covered with a nutrient solution consisting of sea water enriched with 0.5 percent calcium lactate, 0.2 percent ammonium sulfate, 0.05 percent ascorbic acid, and 0.02 percent sodium sulfide. Sea water provides a physiologically balanced mineral salts solution.[77] Diluting it with distilled water permits the growth of fresh-water organisms, or it can be fortified with sodium chloride to provide for the growth of halophilic organisms. Lactate is a good source of energy for sulfate-reducing bacteria.[4,46] Ammonium sulfate provides both utilizable nitrogen and an hydrogen acceptor:

$$SO_4^{--} + 10H \rightarrow H_2S + 4H_2O$$

Either sulfate, thiosulfate, or sulfite appears to be essential for the growth of sulfate-reducing bacteria. Ascorbic acid and sodium sulfide deplete oxygen from the solution and help to create a low redox potential,[78] which favors the growth of sulfate-reducing bacteria. The hydrogen-ion concentration of the nutrient solution was adjusted to pH 7.5 by the addition of normal sodium hydroxide.

Since the growth of sulfate-reducing bacteria generally results in a decrease

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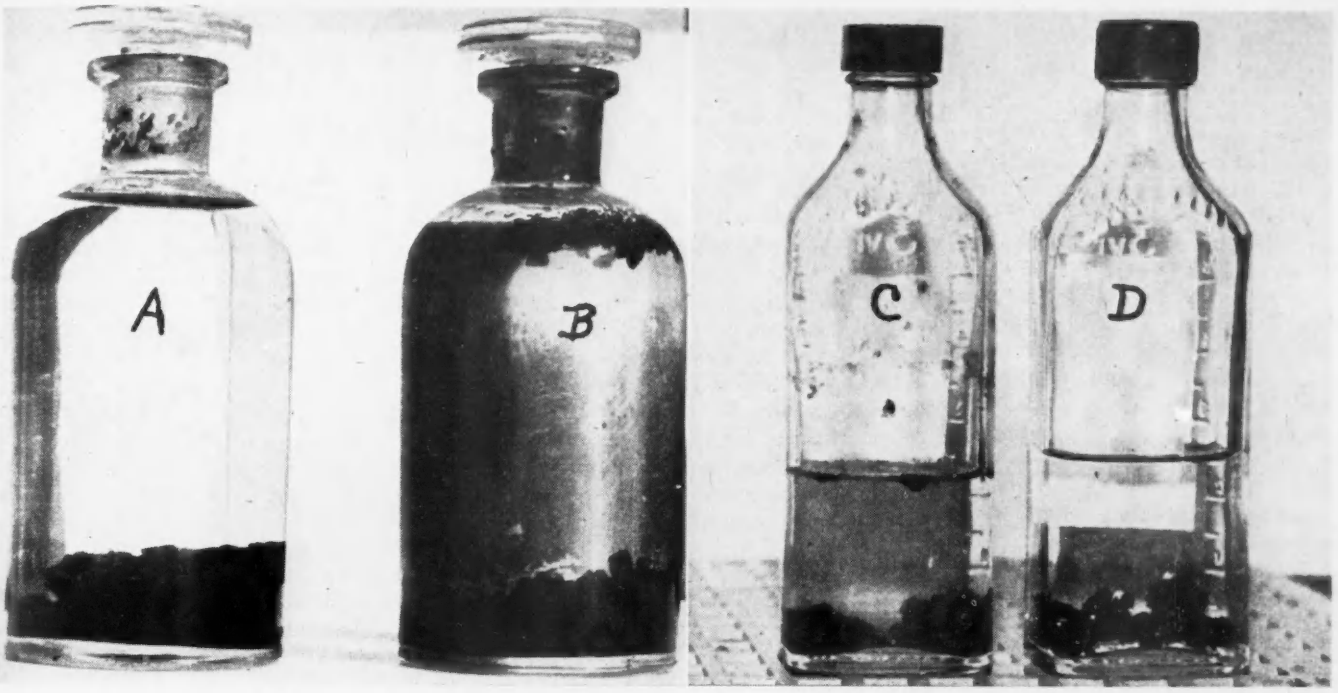


Glass stoppered bottles containing Athabaska tar sand and mineral solution. Bottle A is an uninoculated control (no bacterial action) and bottle B shows a layer of oil released by sulfate-reducing bacteria.

Note the globules of oil on the surface of the medium and the disintegrated clumps of oily shale on the bottom of bottle C in which mixed culture of bacteria have been active, and compare with the control bottle D which contains no bacteria.

in the pH, in some experiments the nutrient solution was buffered by the addition of powdered calcium carbonate. The presence of calcium carbonate was found to promote the release of oil by bacteria, owing partly to its favorable buffer effect but owing mostly to the decomposition of the carbonate with the formation of carbon dioxide gas, bubbles of which tended to buoy up droplets of released oil.

Glucose, starch, cellulose, and other carbohydrates served as satisfactory substitutes for lactate as an energy source in mixed cultures containing sulfate-reducers. In fact, gas evolving from the fermentation of carbohydrates by anaerobes promoted the release of oil from samples of Athabaska tar sand, but the effect of such societies of mixed microflora on the resulting oil was quite variable. In some experiments the oil was emulsified, and in other experiments there was clear-cut evidence that much of the oil was modified or completely destroyed after prolonged incubation. The action of microorganisms on petroleum hydrocarbons has been summarized.[79]

### Action of Pure Cultures

Pure or partially purified cultures of sulfate reducing bacteria released oil from samples of Athabaska tar sand less rapidly than many of the mixed cultures tried. Pure cultures also had less tendency to modify or destroy the oil.

It has been demonstrated that certain sulfate-reducing bacteria attack petroleum hydrocarbons, but they do so only very slowly. Long-chain hydrocarbons in the paraffin wax range are utilized more readily than lighter hydrocarbons. It was predicted by Tausson and Aleshina[84] from thermodynamic calculations and confirmed experimentally by Novelli and ZoBell[39] that no paraffin hydrocarbon having fewer than ten carbon atoms is attacked by sulfate-reducing bacteria. Aromatic or cyclical hydrocarbons are also attacked.[86]

Certain sulfate-reducing bacteria can slowly develop on Athabaska tar sand treated with mineral solution containing no other organic nutrient, provided oxygen is excluded and the redox potential is sufficiently low. Under these conditions, oil is slowly released; much more slowly than by mixed cultures or in mineral solution enriched with lactate or carbohydrate.

After growing pure cultures of sulfate reducers for from ten to 20 days at 27° C. in mineral solution containing no other carbon or energy source than that provided by samples of tar sand, a film of oil commenced to accumulate on the surface of the mineral solution and lumps of the tar sand started to disintegrate. Within six to 12 weeks there was a fairly complete partition of the sand and crude oil, although the sand grains were still discolored with tar. In sea water medium most of the crude oil released from Athabaska tar sand remained in a black, viscous layer immediately over the sand.

Even after 12 weeks' incubation at 27° C. there was no readily discernible evidence that pure or partially purified cultures of sulfate reducers had destroyed any appreciable quantity of oil from Athabaska tar sand. Obviously, the multiplication and metabolism of the bacteria had required some carbon compound, but the amount used was extremely small as compared with the total quantity of crude present.

There are no experimental results to indicate whether the bacteria impaired or improved the quality of the oil for refining purposes. Based upon other experiments, however, it is believed that sulfate-reducing bacteria preferentially attack nitrogenous, sulfur-containing, and oxygenated compounds or long-chain hydrocarbons in the paraffin wax range, but much more work must be done to establish this point.

### Oil-Saturated Shales

Appreciable quantities of crude can be removed from oil-saturated shales by extracting samples with acetone, pentane, carbon tetrachloride, or similar solvents. Water at ordinary temperatures removed little or no oil from the samples of oily shales with which we worked. Sulfate-reducing bacteria have been found to release oil from samples of Santa Maria oily shales more rapidly than from Athabaska tar sand, although the total quantity of oil released from the oily shales was not as great as the total amount released from samples of Athabaska tar sand.

Mixed as well as pure cultures of sulfate reducers grew readily in glass-stoppered bottles containing small lumps of Santa Maria oily shale and filled to

capacity with nutrient medium having the following composition:

| | |
|---|---|
| Sea water | 1000.0 ml. |
| Calcium lactate | 5.0 gm. |
| Ammonium sulfate | 2.0 gm. |
| Ascorbic acid | 0.5 gm. |
| Sodium sulfide | 0.2 gm. |

Growth of the bacteria was accompanied by the separation of oil from the solid sediment. Droplets of oil entrained in gas bubbles were carried to the surface of the medium. There the oil remained for a while suspended in stringy stalactites, and then it slowly settled again owing to the weight of adherent particles of sand, silt, and clay as the gas escaped. This process continued for several days, during which time small lumps of the oily shale were slowly distintegrated and the oil was gradually released from the solids. Much of the oil was emulsified in the sea water medium.

Similar results were obtained with samples of oil-saturated shale from the Casmalia area and with tar sand from the Sisquoc area near Lompoc, Calif.

### No Oil From Oil Shales

Although bacteria liberated oil from tar sands and from oil-saturated shales, no oil whatever was liberated from samples of shale containing no free oil. This generalization is based upon only a few preliminary observations on samples of Chattanooga shale from Kentucky and Green River shale from Colorado. Such shales yield oil by pyrolysis but not by treatment with solvents at ordinary temperatures.

There is no evidence to indicate that bacteria can convert the bituminous material of oil shales into crude. Small lumps of the oil shale were not disintegrated by any of the bacterial cultures tried, and there is no reason to believe that oil shale may be broken down by bacterial activity. The failure of bacteria to liberate oil from oil shales containing no free oil strengthens the conviction that the bacterial release of oil from tar sands or oily shales is primarily a mechanical process, the mechanism of which will be discussed in a later section.

Bacterial cultures also failed in preliminary experiments to release oil from samples of natural rock asphalt, gilsonite, or ozocerite. Samples tested include the following:

XXIX:90-1 Vernal natural asphalt, Pope quarry, Uintah County, Utah

XXIX:90-2 Sunnyside natural asphalt, Means-Gibson quarry, Carbon County, Utah

XXIX:90-3 Gilsonite, Big Bonanza mine, Uintah County, Utah

XXIX:90-4 Ozocerite, Soldier Summit, Uintah County, Utah

XXIX:126-1 Gilsonite, Little Emma mine, Uintah County, Utah

XXIX:126-2 Gilsonite, Little Bonanza mine, Barber Asphalt Company, Utah

XXIX:126-3 Gilsonite, Cowboy vein, Barber Asphalt Company, Utah

XXIX:126-4 Manjak asphalt, Bahia Hondo mine, Pinar del Rio, Cuba

Bacteria were not inhibited by these asphaltic materials. Some of the asphaltic materials were attacked by bacteria but no oil was liberated.

### Oil-Bearing Sand Cores

Cores of oil-bearing sands, two to three inches long and two or 2½ inches in diameter, have been received from Dr. R. V. Hughes, director of production research of the Pennsylvania Grade Crude Oil Association. The cores were placed in half-pint, Ball-brand fruit jars fitted with glass lids and rubber gaskets. Before sealing, the jars were completely filled with nutrient medium having the following composition:

| | |
|---|---|
| Sea water | 750.0 ml. |
| Tap water | 250.0 ml. |
| Potassium phosphate, $K_2HPO_4$ | 0.2 gm. |
| Sodium sulfite, $Na_2SO_3$ | 0.1 gm. |
| Ammonium sulfate, $(NH_4)_2SO_4$ | 1.0 gm. |
| Magnesium sulfate, $MgSO_4.7H_2O$ | 0.5 gm. |
| Calcium lactate | 3.5 gm. |
| Bacto-peptone | 10.0 gm. |
| Ascorbic acid | 0.1 gm. |
| Sodium sulfide, $Na_2S.9H_2O$ | 0.2 gm. |

The reaction of the medium was adjusted to pH 7.5 after autoclave sterilization.

The medium was inoculated with sulfate-reducing bacteria, Culture No. 314-2, originally isolated from Mission Bay mud.[85] The bacteria multiplied prolifically, and after nine days' incubation at 27° C. a film of oil commenced to appear on the surface of the medium covering the oil-bearing sand cores. No oil was released from identical controls held in the refrigerator at near 0° C., at which temperature bacterial multiplication was inhibited.[72] Neither was there any oil released from controls treated with 1.0 percent phenol to prevent the growth of bacteria.[84]

Oil was released from cores of oil-bearing sands as follows:

XXIX:86-1 Horizontal core from Franklin oil mine, Franklin, Penn.

XXIX:86-2 Richburg sand from Bolivar, N. Y.

XXIX:132-1 Oil-well core No. 22, Olean Coring Company, Olean, N. Y.

XXIX:132-2 Oil-well core No. 25, Olean Coring Company, Olean, N. Y.

XXIX:132-4 Oil-well core No. 55 Olean Coring Company, Olean, N. Y.

Negative results were obtained with about a like number of oil-bearing sand cores from the same general formations. Further research work, such as that being conducted by Dr. Jay V. Beck in the microbiology laboratory of the Pennsylvania Grade Crude Oil Association at Bradford, will be required to elucidate the factors which influence the bacterial release of oil from oil-bearing sands.

A slow, though quite definite, release of oil from oil-bearing sand cores from the Franklin mine has been observed in bottles filled with a purely mineral medium, lacking organic matter, inoculated with pure or partially purified cultures of sulfate-reducing bacteria. The multiplying bacteria were able to obtain their energy and carbon requirements from materials in the oil-bearing sands.

### Synthetic Sediments

In order to study the mechanisms by which bacteria cause the release of oil from solids, a series of experiments has been conducted with synthetic sediments and various kinds of solids saturated with either crude oil or fractions thereof. Glass slides, glass beads, glass wool, ignited sea sand, silt, various kinds of clay, calcium carbonate, and other types of sedimentary materials have been used for this purpose. In some experiments oven-dried solids were mixed with oil and the excess oil removed with water. In other experiments the water-wet solids were mixed with oil to the point of saturation. While the amount of oil held by the synthetic sediments was influenced by the method of preparing the mixtures, bacteria seemed to release oil just as readily from water-wet as from oil-wet solids.

Certain clays and colloidal materials adsorbed oil so tenaciously that it could not be removed by treatment with either solvents or bacterial cultures. As with oil shale, however, the oil could be recovered from such adsorbents by heating in vacuo in a retort. Such observations have led the author to wonder whether oil produced by the pyrolytic treatment of oil shale occurs in shale as kerogen "bituminous" material which is converted into oil by heat or if it occurs as hydrocarbons or related compounds tightly bound to clay or colloidal particles.

### Decomposition of Gypsum

Sulfate-reducing bacteria slowly decompose gypsum, anhydrite, and other inorganic sulfates. Adsorbed oil is thereby released and pore or void spaces might be formed, provided the calcium or other cation were converted into a soluble salt. The solubility of calcium salts in sediments depends primarily upon the pH.

One might think that the reduction of sulfate, a strongly acidic radical, would increase the pH, a change that would promote the precipitation rather than the dissolution of calcium. If sulfate occurs in sediments, however, in the form of gypsum, anhydrite, or other salt that is virtually insoluble in water, it would have little effect upon the pH. On the other hand, the more soluble hydrogen sulfide resulting from the reduction of sulfate is itself slightly acidic:

$$CaSO_4 + 8H + 2CO_2 \longrightarrow Ca(HCO_3)_2 + 2H_2O + H_2S$$

The hydrogen and carbon dioxide for the simplified reaction might come from the oxidation of organic matter by sulfate-

# Questions & Answers

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BECAUSE IT is so complete, so adaptable, so trouble-free in all types of pressure control operations, operators everywhere are asking for more information about the Shaffer Type 46 Combination Rotating Blow-Out Preventer and Stripper. Typical questions include . . .

**"DOES IT REQUIRE SPECIAL STRINGS OF PIPE?** *We like to simplify our operations and inventories as much as possible and are wondering if your unit requires flush joint or other special pipe."*

**NO!** The Shaffer Type 46 Combination Rotating Blow-Out Preventer and Stripper requires no special drill string and Stripper requires flush—with equal efficiency and safety. What's more, it maintains its leak-proof seal *continuously* while any type of pipe is raised or lowered through the unit!

**"CAN BITS AND REAMERS BE PASSED THROUGH THE UNIT** *with maximum ease, safety and simplicity?"*

**DEFINITELY YES!** Just pull a latch, rotate the Bonnet 1/6th turn and the entire internal mechanism rides out on top of the bit or reamer. Simply reverse the operation when going back into the hole. It's as easy as that—*and as quick!*

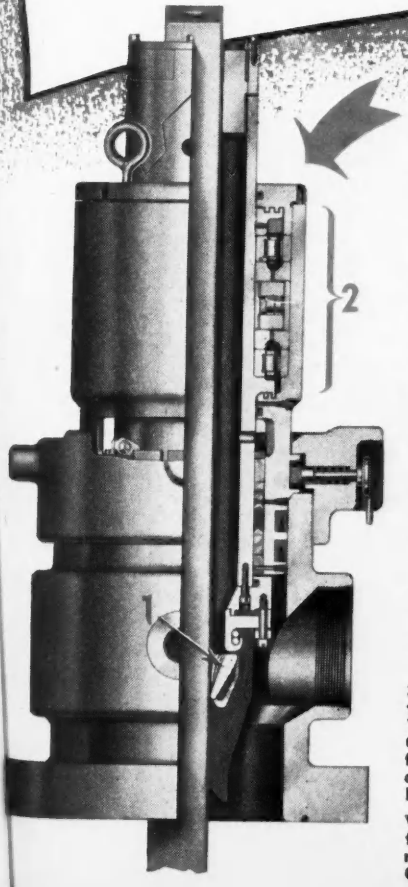
**"WHAT OPERATIONS ARE NEEDED TO PACK OFF THE UNIT?** *Pressure emergencies happen fast. What operations are required to seal-off against pressure leakage around the drill string?"*

**NONE!** The Shaffer Type 46 Combination Rotating Blow-Out Preventer and Stripper is *always* packed off while the drill string is in the hole. No matter how sudden the pressure emergency, it can't be too fast for the Shaffer Preventer *because no operations whatever are needed to place it in operation!*

**"HOW ABOUT THE KELLY?** *Is a special kelly needed to keep from damaging the sealing rubber?"*

**NO SPECIAL KELLY IS NEEDED** with the Shaffer Type 46 Combination Rotating Blow-Out Preventer and Stripper. You can use a square, hexagon or octagon kelly—whichever you prefer—and the *same* unit seals as effectively around each type. What's more, because the Stripper Rubber rotates *with* the kelly—not around it—there is virtually no wear on the Rubber while drilling. Cuts maintenance, assures better pack-off and a maximum of trouble-free safety!

## . . . and note these features




There are many other unique advancements incorporated into the Shaffer Type 46 Combination Rotating Blow-Out Preventer and Stripper of which the following are typical . . .

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reducing bacteria or from other sources. Energy for the bacterial reduction of sulfate may come from the oxidation of hydrogen[61,71,81] or from the oxidation of organic compounds.[4,46] Organic compounds are oxidized to carbon dioxide or carboxylic acids with a resultant decrease in the pH of the medium. Active cultures of sulfate reducers in unbuffered media were observed by Rittenberg[46] to cause the following changes in pH:

| pH Initial | pH after 14 days | pH after 35 days |
|---|---|---|
| 7.8 | 6.0 | 5.8 |
| 7.0 | 6.4 | 5.9 |
| 6.0 | 5.9 | 5.8 |

In four other experiments reported by Rittenberg,[46] sulfate-reducing bacteria caused decreases in pH from an initial value of 8.5 to an average of pH 7.1 in 20 days at 30° C.

A good way to demonstrate the activity of sulfate-reducing bacteria is to introduce them into a plaster of paris medium having the following composition:

| | |
|---|---|
| Sea water (or other mineral solution) | 1000.0 ml. |
| Ferrous ammonium phosphate, $FeNH_4PO_4$ | 0.1 gm. |
| Plaster of paris, $CaSO_4.2H_2O$ | 50.0 gm. |
| Calcium carbonate, $CaCO_3$ | 40.0 gm. |
| Calcium lactate, $Ca(C_3H_5O_3)_2$ | 5.0 gm. |
| Ascorbic acid, $C_6H_8O_6$ | 0.1 gm. |

Before the medium sets or solidifies, it is inoculated with material suspected of containing sulfate reducers, dispensed in test tubes. After a few days incubation the activity of sulfate reducers is indicated by the appearance of black spots or zones in the chalky white medium, caused by the reaction of hydrogen sulfide from sulfate with ferrous iron:

$$H_2S + FeNH_4PO_4 \rightarrow FeS + H_2NH_4PO_4$$

The ferrous sulfide is black.

Mineral oil has been substituted for calcium lactate in the plaster of paris medium with similar results, although sulfate-reducing bacteria grow less rapidly when dependent upon hydrocarbons as a source of energy.

### Carbonates Are Dissolved

A good many bacterial species dissolve carbonates by producing organic acids. This is particularly true of anaerobes, many of which ferment carbohydrates with the formation of butyric, lactic, propionic, acetic, or other carboxylic acids. Such acids may be produced also by the anaerobic decomposition of proteins and fats.

The tendency is for bacteria to break higher fatty acids down into lower members of the series, which being more strongly dissociated in water are more acidic. The overall effect is to lower the pH of the medium in which such bacteria are growing. It is not uncommon for anaerobic bacteria to produce enough acids in unbuffered nutrient media to change the reaction from pH 7.5 to pH 6.0 or lower. The tendency is to convert calcium carbonate into bicarbonate below pH 9.5 and to convert bicarbonate into carbon dioxide below approximately pH 7.5:

$$2CaCO_3 + 2HA \rightarrow Ca(HCO_3)_2 + CaA_2$$
$$Ca(HCO_3)_2 + 2HA \rightarrow 2CO_2 + 2H_2O + CaA_2$$

where A is a monovalent acid radical.

Carbonic acid, $H_2CO_3$, resulting from the combination of water with carbon dioxide produced by respiring bacteria, tends to dissolve limestone and other carbonate rocks. If particles of limestone, dolomite, or other carbonate materials, to which oil is adsorbed, are dissolved, the adsorbed oil is liberated. Simultaneously, void or pore spaces are formed which provide for the accumulation or migration of oil. The tendency of bacteria to dissolve carbonates is believed to be one of the principal mechanisms by which they contribute to the liberation, migration, and accumulation of oil in sedimentary materials. Certain sulfate-reducing bacteria are endowed with this ability.

Hydrogen-oxidizing bacteria may also help to dissolve limestone or dolomite. Molecular hydrogen, which serves as a source of energy for such bacteria, may be produced during the anaerobic fermentation of organic matter,[81] it may result from the effects of radioactivity on hydrogen-containing compounds,[80,81] or hydrogen may be formed from any one of a number of other chemical reactions in the earth's crust.[28,38]

The best known of the hydrogen-oxidizing bacteria are those which reduce carbon dioxide to methane:

$$CO_2 + 4H_2 \rightarrow CH_4 + 2H_2O$$

The work of Söhngen,[54] Fischer et al,[22] Stephenson and Stickland,[63] Barker,[5,6] Buswell,[15] and others indicate that this is the principal way in which methane is formed. The utilization of carbon dioxide with the formation of methane would tend to dissolve carbonates, causing the following simplified series of reactions to proceed to the right:

$$CO_3^{--} \rightarrow HCO_3^- \rightarrow CO_2 \rightarrow CH_4$$

Other types of anaerobic bacteria have been described which oxidize hydrogen while reducing carbon dioxide to acetic acid:[7,23,71]

$$2CO_2 + 4H_2 \rightarrow CH_3COOH + 2H_2O$$

Propionic acid and butyric acid[8] may likewise be formed by the reduction of carbon dioxide and the oxidation of hydrogen. Acids dissolve carbonates. Whether such acid-producing bacteria are present and active in petroliferous sediments is highly speculative, but there are many reasons for believing that methane-producing[15,81] and sulfate-reducing bacteria have been active and may still be present in certain oil bearing formations.[9,24,25,26,81]

Sulfate-reducing bacteria have been found to release oil quite effectively from synthetic sediments consisting partly or entirely of oil-saturated calcium or magnesium carbonate in the presence of appropriate nutrient media.

### Effect of Evolved Gases

A few bacterial species consume or fix carbon dioxide; nearly all physiologically active bacteria produce carbon dioxide. Besides its effects on the solubility or porosity of calcareous sediments, carbon dioxide may influence the release and movement of oil in other ways. Carbon dioxide decreases the viscosity of oil, thereby promoting the flow of oil. Moreover, tiny bubbles of carbon dioxide have a buoyant effect on droplets of oil or gas bubbles may force oil through capillary spaces or out of microtraps. Reference has been made to the tendency of bacterially produced gases to promote the separation of oil from solids in laboratory experiments, although carbon dioxide may behave somewhat differently under high pressures encountered at great depths.

Methane produced by bacteria in the immediate vicinty of oil may dissolve oil, thereby rendering it more fluid or mobile. Methane, hydrogen, or other

## *About the Author*

DR. CLAUDE E. ZoBell was born in Provo, Utah, August 22, 1904. B. S. degree in 1927 and M. S. degree in 1929 from Utah State Agricultural College. Ph. D. degree in 1931 from University of California. Post-doctorate work at the University of Wisconsin and Woods Hole Oceanographic Institution. In charge of research program in marine microbiology at the Scripps Institution of Oceanography since 1932. Author of 121 technical publications, mostly on the occurrence and importance of bacteria in marine bottom deposits, including a 140,000-word book, "Marine Microbiology." Officer or active in ten scientific societies. Director of API Research Project 43A since 1942. Consultant on other research projects, both fundamental and applied. Chairman of the committee for the application of microbiology to petrology under the auspices of the National Research Council. Member of AAPG research committee. Left La Jolla June 20 for a year's sabbatical leave on a special fellowship awarded by the Rockefeller Foundation which provides for travel and study in Europe. Served as vice president at the Fourth International Congress for Microbiology, in Section 7: Water and Soil Microbiology, in Copenhagen, July 20-26.

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gases produced in micro-traps or pore spaces having dead ends could be expected to expel droplets of oil into central channels or reservoirs of oil. The total quantity of oil locked up in dead-end pockets or pore spaces of microscopic dimensions is probably appreciable.

### Affinity of Bacteria for Solids

Many species of bacteria grow tenaciously attached to solid surfaces. This is the basis of the buried glass-slide technique of Cholodny[18] for the direct microscopic study of soil bacteria. It is also the basis of the submerged glass-slide technique employed by Henrici,[19] ZoBell and Allen,[52] Hotchkiss and Waksman,[31] Smith and ZoBell,[53] and others[14] for making ecological surveys of water bacteria. Kusnetzowa[33] believed that all water bacteria are capable of attaching themselves to glass or other inert solids. Henrici and Johnson[30] have described several species of periphytic bacteria which grow only attached to a firm substrate. Fifteen species of bacteria isolated from marine materials were found by ZoBell and Upham[57] to be forms which grew preferentially or exclusively attached to solid surfaces. Certain varieties of sulfate reducers and other kinds of bacteria have been found to have sufficient affinity for solid surfaces to crowd off films of oil or grease.

In the course of their life cycle, sulfate reducers pass through a "swarm" stage which is followed by a "resting" stage. During the swarm stage the bacteria are actively motile, but during the resting stage they settle down on and attach themselves to a solid surface, whether it be the bottom of the culture receptacle, glass beads, sand, or glass slides. The tendency of bacteria to attach themselves to solid surfaces has been studied by immersing glass slides in active cultures. After different periods of immersion the glass slides were removed for microscopic examination. Every square micron of surface was found to be coated with adherent bacteria after two or three days' immersion in culture media incubating at 27° C.

Coating the glass slides with films of petrolatum or heavy oil has proved to be no deterrent to the attachment of bacteria in culture media. Not only did the bacteria tenaciously attach themselves to immersed glass slides but in so doing they seemed to crowd off films of grease or oil. Small droplets or layers of the latter were gradualy released and appeared floating on the surface of the nutrient media.

Similar results have been observed when glass beads, glass wool, and silica sand, coated with grease or oil, were covered with bacterial cultures growing under anaerobic conditions. The release of oil is attributed primarily to a mechanical action of bacteria settling down and growing on solid surfaces, although carbo dioxide and surface tension depressants produced by the bacteria may contribute to the removal of oil or grease from solid surfaces.

### Surface Tension Depressants

Soaps, detergents, or other surface-active substances tend to remove oil from solid surfaces under certain conditions.[12] There is evidence that surface tension depressants are produced by microörganisms. For example, Cooper[20] found that the tubercle bacillus reduced the surface tension of a synthetic medium from an initial value of 72.4 dynes per centimeter to 53 dynes after eight weeks. A culture of *Penicillium notatum,* studied by Reid,[42] reduced the surface tension of nutrient medium in which it was growing, from 52.6 to 43.1 dynes per centimeter. Further observations on the relationships between bacteria and surface tension of their culture media have been summarized by Larson.[34]

Pure or partially purified cultures of sulfate-reducing bacteria have been observed to reduce the surface tension of sea-water medium enriched with peptone and calcium lactate from initial values of around 63 dynes per centimeter to as low as 46 dynes after six weeks incubation at 27° C. Culture medium, containing surface tension depressants produced by bacteria, was sterilized either by treating it with 1.0 percent phenol or by heating it to 100° C. for ten minutes. The resulting bacteria-free medium, having a surface tension of around 50 dynes per centimeter, was observed to effect the release of oil from ignited sea sand saturated with oil. Since no oil was released from oil-saturated sea sand by uninoculated control medium having a surface tension of around 63 dynes per centimeter, the observation was interpreted as indicating that bacterially produced surface-active substances or wetting agents were partly responsible for the release of oil from solids.

Surface-active substances, produced by bacteria growing on solid surfaces, may play an important role in the liberation of oil from solids. Further observations along this line are indicated.

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## Petroleum Division, AIME, Plans Three Fall Meetings

Denver, Tulsa and Los Angeles have been selected as sites for three meetings planned this fall by the Petroleum Division, AIME. The regional meeting will be at Denver in the Shirley Savoy Hotel, September 28-October 3, to be followed by the division's fall meeting at Tulsa in the Mayo Hotel, October 8-10. The last fall meeting will be at Los Angeles in the Elks Club, October 23-24.

The following papers are scheduled for presentation at the Denver meeting: "Our Petroleum Reserves," Everette DeGolyer, DeGolyer & MacNaughton, Dallas; "Review of Geological Aspects of Exploration—Past, Present and Future—in the Rocky Mountain Region," John Bartram, Stanolind Oil & Gas Company, Tulsa; "Refining From the Modern Point of View," Gustav Egloff, Universal Oil Products Company, Chicago; "Drilling Problems Encountered in Church Butte Field," J. T. Simon, Mountain Fuel Supply Company, Casper; "Waters of Producing Oil & Gas Fields in Colorado, Wyoming, and Montana," J. G. Crawford, Chemical Laboratories, Inc., Casper; "Uses of Electric Logging in Connection with Reservoir Engineering Problems in the Rocky Mountain Fields," Maurice P. Tixier, Schlumberger Well Surveying Corporation, Casper; "Drilling Mud Problems— Rocky Mountain Region," by Willard Kimbrell, and presented by D. V. Varnell, both of Baroid Sales Division, National Lead Company, Tulsa; "Diamond Coring at Rangely," C. J. Christiansen, Stanolind Oil & Gas Company; "Lance Creek Sundance Reservoir Performance under Unitized Pressure Maintenance," by Lincoln F. Elkins and Wayne E. Glenn, Continental Oil Company, Ponca City, Okla., and Richard W. French, Jr., Standard Oil Company of Ohio, Oklahoma City; "Oil Shale Reserves," Carl Belser, U. S. Bureau of Mines, Rifle, Colo.; "Mining of Oil Shale," E. D. Gardner and Tell Ertl, U. S. Bureau of Mines, Rifle; "Processing of Oil Shale," J. D. Lankford and Boyd Guthrie, U. S. Bureau of Mines, Rifle. Last day of the meeting will include a field trip by air to the Rangely field and the U. S. Bureau of Mines oil shale retort plant and mines.

At the Tulsa meeting, papers scheduled are as follows: "Comparison of Analyzer Predictions with Actual Field Histories," Miss Irene Haskedt, The Carter Oil Company, Tulsa; Welge, The Carter Oil Company, Tulsa; "A "Displacement of Oil by Water and Gas," H. J. Note on the Calculation of Initial Distribution of Oil & Gas in Reservoirs," Morris Muskat, Gulf Research & Development Company, Pittsburgh; "Water Flood and Gas Drive Experiments," Roger Holmgren, Stanolind Oil & Gas Company, Tulsa; "A New Application of the Dipmeter," Robert G. Hamilton, Schlumberger Well Surveying Corporation, Tulsa; "Lance Creek Sundance Reservoir Performance under Unitized Pressure Maintenance," Lincoln F. Elkins and Wayne E. Glenn, Continental Oil Company, Ponca City, and Richard W. French, Jr., Standard Oil Company of Ohio, Oklahoma City; "A Turbulent Radial Flow Formula," Jack Elenbaas and Donald L. Katz, University of Michigan, Ann Arbor; "Location of Water Entry Points in Various Types of Reservoirs," Daniel Silverman, Stanolind Oil & Gas Company, Tulsa; "Analysis of Spinner Survey Results," Robert G. Hamilton, Schlumberger Well Surveying Corporation, Tulsa; "An Improved Water Input Profile Instrument," Rudolph J. Pfister, Penn Grade Crude Oil Association, Bradford, Penn.; "Mechanics of Wave Action on Structures," Walter H. Munk, Scripps Institute of Oceanography, LaJolla, Calif.; "Ocean Floor Soil Exploration and Bearing Capacity," M. B. Willey, J. Ray McDermott Company, Harvey, La.; "Important Considerations in Marine Construction," Admiral Frederic R. Harris, Frederic R. Harris, Inc., New York; "Preplanned Programs of Directional Drilling," Gordon Jackson, Eastman Oil Well Surveying Company, Denver; "Methane Carbon Dioxide Gas Hydrates," Donald L. Katz and Kent, University of Michigan, Ann Arbor; "Phase Relationships of gas Condensate Fluid at Low Temperatures, Including the Critical State," by authors from the U. S. Bureau of Mines, Bartlesville; "Methods of Estimating Gas Reserves," Henry J. Gruy and Jack L. Crichton, DeGolyer & MacNaughton, Dallas; "Overburden Pressures and Their Effect on Forces in Well Bores," Dale Topping and Miles, Missouri School of Mines, Rolla, Mo.

The Los Angeles meeting will include the following papers: "Methods of Predicting Pool Performance from History of Oil Production and Pressure Decline Data," Carlton Beal, consulting engineer, Los Angeles; "Apparatus for Determination of the Volumetric Behavior of Fluids," B. H. Sage and W. N. Lacey, California Institute of Technology, Pasadena; "Methods of Computing Gas Reserves," Henry J. Gruy and Jack L. Crichton, DeGolyer & MacNaughton, Dallas; "Location of Water Entry Points in Various Types Reservoirs," Daniel Silverman, Stanolind Oil & Gas Company, Tulsa; "State of Readiness of the Elk Hills Reserve," Max Eastman, U. S. Navy Department, Elk Hills, Calif.; "Method of Determining Number of Samples Needed in Core Analysis," Jan Law, consulting engineer, Los Angeles; "Electric Log Correlation," Milt Loy, Schlumberger Well Surveying Corporation, Los Angeles; "Preplanned Directional Drilling Programs," Gordon Jackson, Eastman Oil Well Surveying Corporation, Denver; "Mechanics of Wave Action on Structures," Walter H. Munk, Scripps Institute of Oceanography, LaJolla, Calif.; "Analysis of the Results of Spinner Surveys," by a Dowell Incorporated author; "California Crude Oil Supply and Demand," R. L. Minckler, vice president, General Petroleum Corporation, Los Angeles; and "Importation of Foreign Crude to California," by a Standard Oil Company of California author.

## Fire Damages Refinery

One man was injured and damage estimated at more than $100,000 was sustained by the Panhandle Refining Company's refinery on the northern outskirts of Wichita Ralls, Texas, as a result of a blaze which raged out of control for two hours. The fire broke out at the loading dock and engulfed ten gasoline storage tanks and a nearby warehouse. In storage were 3 million gallons of gasoline in addition to the gasoline in the burning tanks.

## Shortage Probed

The Department of Justice last week undertook its own investigation of shortage conditions in the Middle West, sending agents into Detroit where city officials had complained of inability to secure gasoline and where, they said, supplies for transportation and other needs were about exhausted. Purpose of the antitrust division action was to determine if any violations of the antitrust laws were involved.

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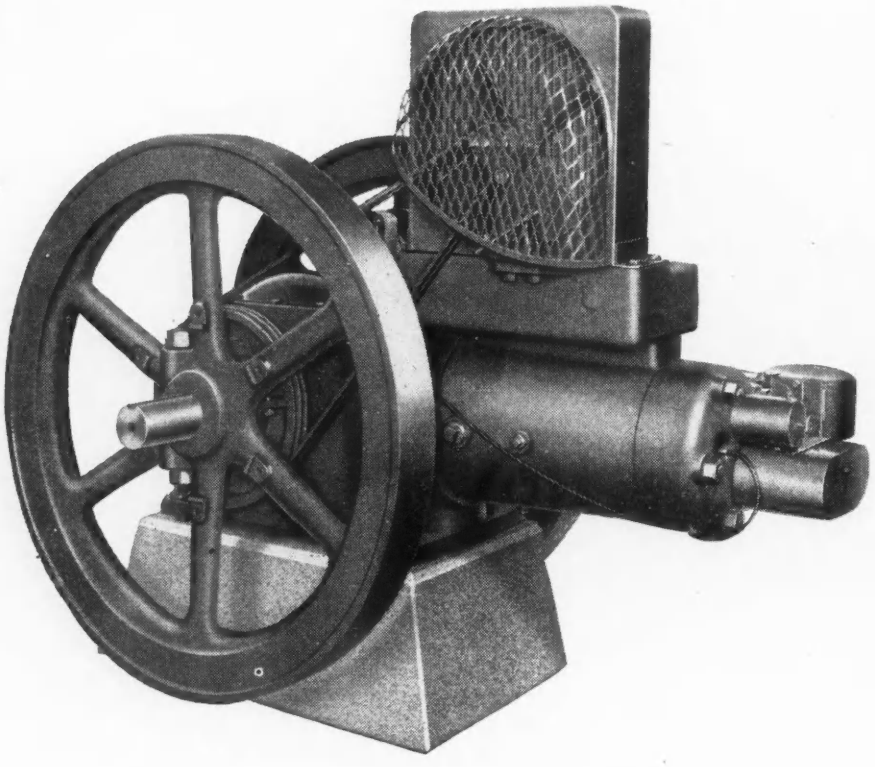

# The ZC Engine for Oil Well Pumping

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# Completions 10 Percent Above 1946 Period

THIS year's second half got off with a fast start as the number of wells completed in the initial month increased sharply, indicating further that the industry's efforts for the first six months would be far surpassed during the last half of the year. At the end of July, total completions numbered almost 10 percent more than at the same time last year and the number of active drilling rigs was at an all-time high; which, if given a fairly adequate supply of tubing, could bring the year's total almost to the peak level of 1937 when 35,000 wells were drilled.

Well completions during July totaled 3273 to make the month the most active of the year so far, and to show a substantial increase over the 2763 of the previous month and the 2407 over the like period a year ago. Of July's total, 512 were exploratory completions, the largest number of this category in any month this year.

At the end of seven months, completions numbered 18,189, an increase of 9.5 percent over the 16,607 wells completed during the comparable period of 1946. A month before, the year's total had enjoyed a lead of only 5 percent over last year, but that lead was almost doubled during the past month and it now appears that the gap will be widened much more before the close of December.

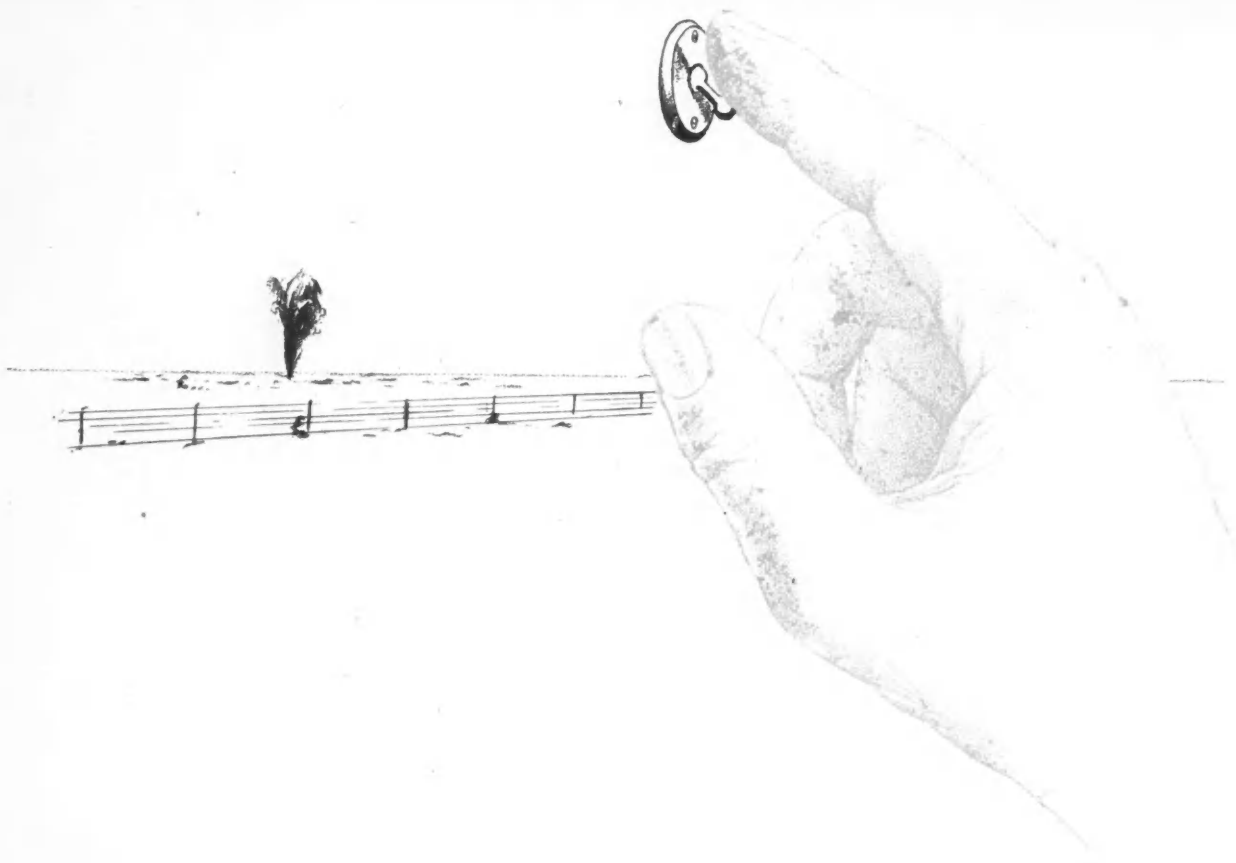
Though drillers continue to be plagued by insufficient supplies of tubular goods, the number of drilling rigs in operation is the largest in history. At the end of July these rigs totaled 4992, an increase of 190 outfits during the month and 649 more than were active a year before. The most notable increase in the number of active rigs over a month ago occurred in Kansas where 378 are now working against 207 making hole at the end of June.

## Well Completions in the United States During July, 1947, and Cumulative for Year

(Figures compiled from weekly reports of WORLD OIL Staff, with following exceptions: Illinois from Illinois Geological Survey; Indiana from Indiana Division of Geology; Missouri from Missouri Geological Survey; Tennessee from Tennessee Division of Geology: Bradford, Kane-Clarendon, and Allegheny fields of Pennsylvania and New York from The Producers' Monthly.)

| STATE OR DISTRICT | MONTHLY COMPLETIONS, JULY, 1947 | | | | | | | | | Total Completions | | | | CUMULATIVE TOTAL January-July | | | | Rigs in Operation (Drilling, Rigging Up and Shut Down) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | New Wells | | | | | | | | Total Drilled Deeper | | | | | | | | | | | |
| | Oil | Dist. | Gas | Dry | Water Input | Gas Input | Water Disposal | Total New | | July, 1947 | June, 1947 | July, 1946 | Footage July, 1947 | Wells 1947 | Wells 1946 | Percent Diff. | Footage, 1947 | July 31, 1947 | June 30, 1947 | July 31, 1946 |
| Alabama | 1 | | | 2 | | | | 3 | | 3 | 2 | | 13,170 | 12 | 8 | + 50.0 | 47,403 | 8 | 7 | 5 |
| Arizona | | | | | | | | | | | | | | | 1 | —100.0 | | 2 | 2 | 1 |
| Arkansas | 11 | 1 | 1 | 13 | | | | 26 | | 26 | 19 | 13 | 116,118 | 146 | 103 | + 41.7 | 630,853 | 31 | 40 | 28 |
| California | 115 | | 2 | 25 | | | | 142 | 1 | 143 | 147 | 141 | 640,620 | 1,077 | 1,085 | — 0.7 | 4,535,898 | 254 | 266 | 259 |
| Colorado | 18 | | 1 | 6 | | | | 25 | | 25 | 16 | 12 | 139,696 | 104 | 76 | + 3.7 | 565,777 | 74 | 62 | 70 |
| Florida | | | | 2 | | | | 2 | | 2 | 4 | 4 | 7,435 | 19 | 15 | + 26.7 | 95,723 | 6 | 6 | 6 |
| Georgia | | | | 2 | | | | 2 | | 2 | | | 8,098 | 3 | 2 | + 50.0 | 11,945 | 1 | 2 | |
| Illinois | 96 | | | 89 | | | | 185 | 2 | 187 | 167 | 195 | 483,800 | 1,089 | 1,272 | — 14.4 | 2,784,590 | 235 | 229 | 261 |
| Indiana | 24 | | 2 | 29 | | | | 55 | | 55 | 63 | 60 | 100,638 | 310 | 270 | + 14.8 | 568,849 | 87 | 70 | 77 |
| Iowa | | | | | | | | | | | | | | | | | | | | 1 |
| Kansas | 153 | | 26 | 85 | | | 2 | 266 | 8 | 274 | 190 | 156 | 864,353 | 1,395 | 1,172 | + 1.9 | 4,372,905 | 378 | 297 | 280 |
| Kentucky | 35 | | 19 | 31 | | | | 85 | | 85 | 49 | 83 | 148,174 | 432 | 459 | — 5.9 | 774,245 | 119 | 127 | 111 |
| Louisiana | 89 | 6 | 10 | 77 | | | | 182 | 2 | 184 | 116 | 100 | 858,458 | 807 | 729 | + 10.7 | 4,608,433 | 196 | 190 | 140 |
| North Louisiana | 54 | 1 | 10 | 62 | | | | 127 | 1 | 128 | 62 | 60 | 355,720 | 454 | 395 | + 14.9 | 1,451,105 | 61 | 67 | 58 |
| South Louisiana | 35 | 5 | | 15 | | | | 55 | 1 | 56 | 54 | 40 | 502,738 | 353 | 334 | + 5.7 | 3,157,328 | 135 | 123 | 82 |
| Michigan | 38 | | 3 | 25 | | | | 66 | | 66 | 69 | 64 | 155,080 | 344 | 435 | — 20.9 | 798,793 | 134 | 110 | 121 |
| Mississippi | 34 | 2 | 2 | 12 | | | | 50 | 1 | 51 | 54 | 12 | 426,217 | 264 | 130 | +103.1 | 2,234,833 | 85 | 91 | 36 |
| Missouri | 1 | | | 1 | | | | 2 | | 2 | 3 | 6 | 688 | 28 | 19 | + 47.4 | 13,109 | 5 | 4 | 3 |
| Montana | 23 | | 4 | 7 | | | | 34 | | 34 | 23 | 22 | 83,179 | 107 | 143 | — 25.2 | 258,776 | 72 | 64 | 65 |
| Nebraska | | | | 1 | | | | 1 | | 1 | | | 6,788 | 1 | | | 6,788 | 6 | 6 | 5 |
| New Mexico | 42 | | 5 | 9 | | | | 56 | 3 | 59 | 52 | 29 | 242,590 | 347 | 230 | + 50.9 | 1,430,520 | 135 | 126 | 99 |
| New York | 115 | | 1 | 1 | 70 | | | 187 | | [5]187 | [5]158 | 126 | 265,151 | [5]983 | 672 | +[5]46.3 | 1,394,888 | [5]231 | [5]196 | 161 |
| North Carolina | | | | | | | | | | | | 1 | | 1 | 1 | | 6,370 | | | |
| Ohio | 26 | | 63 | 38 | | | | 127 | 1 | 128 | 110 | 79 | 359,524 | 757 | 671 | + 12.8 | 2,178,567 | 239 | 244 | 232 |
| Oklahoma | 186 | | 16 | 136 | | 2 | 1 | 341 | 11 | 352 | 337 | 258 | 1,050,595 | 2,143 | 1,496 | + 43.2 | 6,398,970 | 515 | 503 | 472 |
| Oregon | | | | | | | | | | | 1 | | | 1 | 2 | — 50.0 | 8,500 | | | |
| Pennsylvania | 104 | | 48 | 17 | 88 | 24 | | 281 | 2 | [5]283 | [5]280 | 367 | 485,821 | [5]1,891 | 2,483 | —[5]23.8 | 3,274,754 | [5]416 | [5]396 | 413 |
| South Dakota | | | | | | | | | | | | | | | | | | | | 4 |
| Tennessee | | | | | | | | | | | 1 | | | 9 | 2 | +350.0 | 7,192 | 7 | 7 | 5 |
| Texas | 578 | 16 | 53 | 339 | | 2 | 1 | 989 | 25 | 1,014 | 815 | 617 | 4,084,770 | 5,324 | 4,627 | + 15.1 | 22,738,493 | 1,284 | 1,277 | 1,061 |
| Dist. 1—S. Central | 17 | | 1 | 13 | | | | 31 | | 31 | 21 | 16 | 111,809 | 179 | 88 | +108.1 | 650,078 | 29 | 34 | 24 |
| Dist. 2—Middle Gulf | 40 | 4 | 9 | 11 | | | | 64 | 1 | 65 | 52 | [1] | 370,243 | 365 | [1] | [1] | 2,218,704 | 58 | 58 | [1] |
| Dist. 3—Upper Gulf | 51 | 7 | 1 | 34 | | | | 93 | 1 | 94 | 49 | 36 | 535,895 | 469 | 371 | + 26.4 | 2,957,637 | 124 | 98 | 70 |
| Dist. 4—L. Gulf-S.W. | 60 | 4 | 7 | 36 | | | | 107 | 6 | 113 | 101 | 129 | 583,494 | 656 | 879 | + 16.2 | 3,494,122 | 108 | 109 | 118 |
| Dist. 5—E. Central | 5 | | 1 | 12 | | | | 18 | | 18 | 19 | [2] | 84,979 | 81 | [2] | [2] | 421,145 | 29 | 32 | [2] |
| Dist. 6—Northeast | 33 | 1 | 8 | 14 | | | | 56 | | 56 | 40 | 42 | 266,843 | 281 | 388 | — 6.7 | 1,402,250 | 61 | 68 | 100 |
| Dist. 7-B—N. Central | 44 | | 1 | 50 | | | | 95 | 1 | 96 | 76 | [3] | 293,869 | 484 | [3] | [3] | 1,501,746 | 122 | 131 | [3] |
| Dist. 7-C—W. Central | 17 | | | 7 | | | | 24 | 3 | 27 | 29 | [4] | 94,831 | 147 | [4] | [4] | 499,404 | 32 | 73 | [4] |
| Dist. 8—West | 165 | | 1 | 23 | | | | 189 | 8 | 197 | 191 | 139 | 921,174 | 1,122 | 959 | + 17.0 | 5,390,573 | 404 | 386 | 419 |
| Dist. 9—North | 127 | | | 131 | | 2 | 1 | 261 | 3 | 264 | 197 | 235 | 652,706 | 1,261 | 1,724 | — 18.3 | 3,265,154 | 162 | 172 | 258 |
| Dist. 10—Panhandle | 19 | | 24 | 8 | | | | 51 | 2 | 53 | 40 | 20 | 168,927 | 279 | 220 | + 26.8 | 937,680 | 125 | 116 | 72 |
| Utah | | | | | | | | | | | | | | 3 | 2 | + 50.0 | 14,143 | 6 | 7 | 7 |
| Washington | | | | | | | | | | | | | | | 1 | —100.0 | | 1 | 1 | |
| West Virginia | 9 | | 49 | 23 | | | | 81 | 2 | 83 | 76 | 50 | 226,304 | 471 | 412 | + 14.3 | 1,285,661 | 368 | 375 | 356 |
| Wyoming | 19 | | 1 | 7 | | | | 27 | | 27 | 11 | 12 | 112,905 | 121 | 89 | + 36.0 | 562,847 | 97 | 97 | 64 |
| Total United States | 1,717 | 25 | 306 | 977 | 158 | 28 | 4 | 3,215 | 58 | 3,273 | 2,763 | 2,407 | 10,880,172 | 18,189 | 16,607 | + 9.5 | 61,609,825 | 4,992 | 4,802 | 4,343 |

[1] Dist. 2 included with Dist. 4. [2] Dist. 5 included with Dist. 6. [3] Dist. 7-B included with Dist. 9. [4] Dist. 7-C included with Dist. 8. [5] Part of Bradford field now included in New York; formerly, all was carried in Pennsylvania.



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# July Exploration Highest of Year

**Summary of Results of Exploratory Drilling**

| ITEM | July, 1947 | June, 1947 | Seven Months: Jan.-July 1947 | 1946 | Percent Diff. |
|---|---|---|---|---|---|
| **Oil Discoveries** | 67 | 57 | 394 | 284 | + 38.7 |
| New Fields | 33 | 37 | 224 | 165 | + 35.8 |
| New Pays | 34 | 20 | 170 | 119 | + 42.9 |
| **Distillate Discoveries** | 10 | 6 | 54 | 39 | + 38.5 |
| New Fields | 6 | 2 | 25 | 19 | + 31.6 |
| New Pays | 4 | 4 | 29 | 20 | + 45.0 |
| **Gas Discoveries** | 11 | 13 | 63 | 77 | — 18.2 |
| New Fields | 9 | 11 | 48 | 58 | — 17.2 |
| New Pays | 2 | 2 | 15 | 19 | — 21.1 |
| **Total Discoveries** | 88 | 76 | 511 | 400 | + 27.8 |
| **Extensions to Fields** | 18 | 6 | 80 | 124 | — 35.5 |
| Oil Fields | 10 | 5 | 58 | 93 | — 37.6 |
| Distillate Fields | 2 | | 9 | 4 | +125.0 |
| Gas Fields | 6 | 1 | 13 | 27 | — 51.9 |
| **Total Prod. Tests** | 106 | 82 | 591 | 524 | + 12.8 |
| **Dry Holes** | 406 | 385 | 2,310 | 1,951 | + 18.4 |
| Wildcats | 396 | 375 | 2,239 | 1,906 | + 17.5 |
| New Pays | 7 | 4 | 36 | 27 | + 33.3 |
| Outposts | 3 | 6 | 35 | 18 | + 94.4 |
| **Total Expl'tory Tests** | 512 | 467 | 2,901 | 2,475 | + 17.2 |
| Percent Productive | 20.7 | 17.6 | 20.4 | 21.2 | |
| Percent Dry | 79.3 | 82.4 | 79.6 | 78.8 | |

THIS year's exploratory drilling campaign continued very active during July and at the end of seven months the number of wells of this type completed held a lead of 17 percent over last year's record-breaking operations. At the end of the period there were more rigs in operation than ever before and the increasing number that are being devoted to exploration should boost the year's total exploratory wells to a new all-time record of 5000 or over.

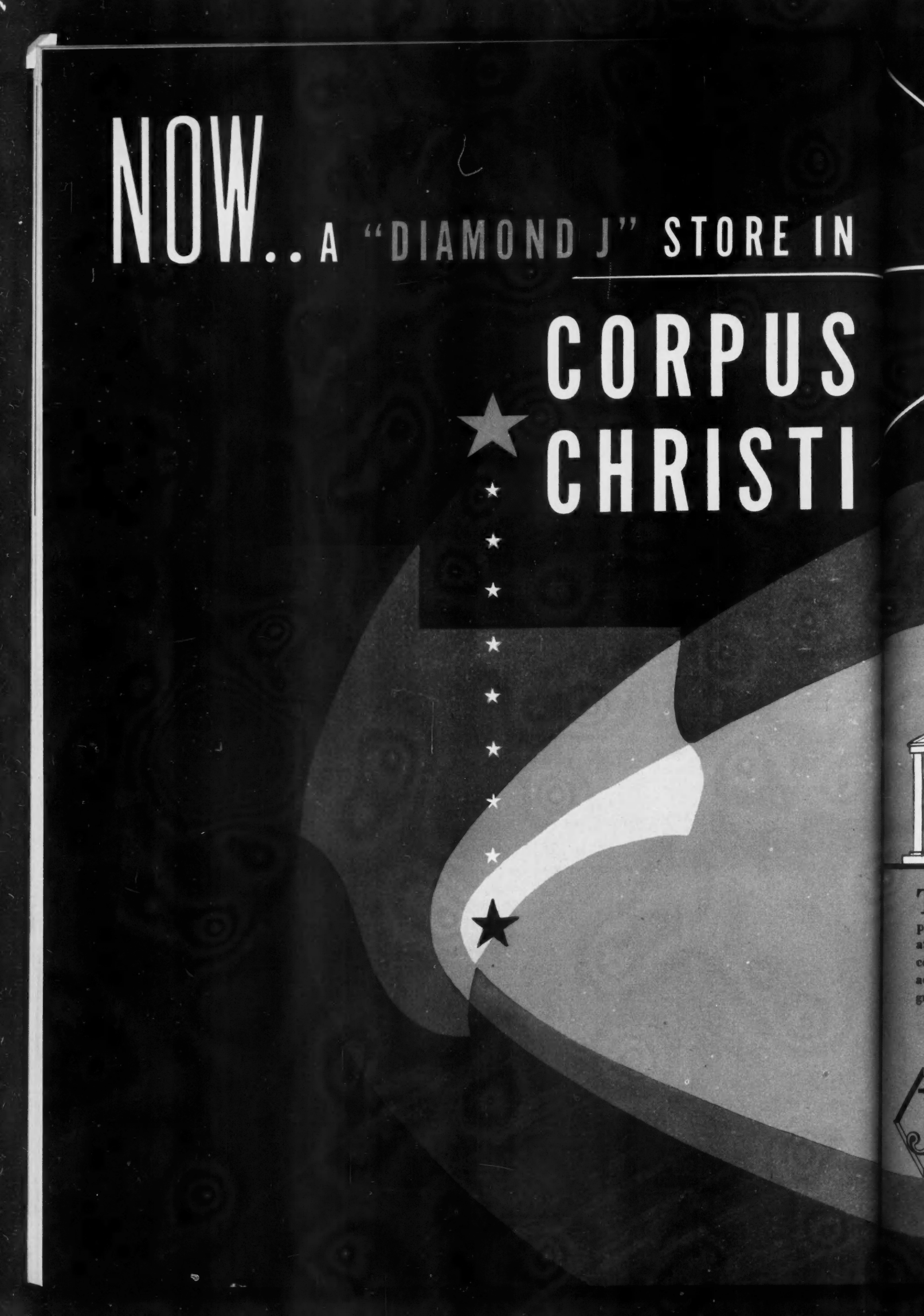
Exploratory well completions made during July totaled 5[illegible] compared with 467 in the previous month and 370 in the comparable period of last year. Of July's total 106 were rated as successful, for a score of 20.7 percent. These producers established new fields, new pay horizons or extensions to known fields. New oil fields numbered 33 and new pays amounted to 34 for a total of 67 new sources of crude oil. The remainder were gas and distillate discoveries and field extensions.

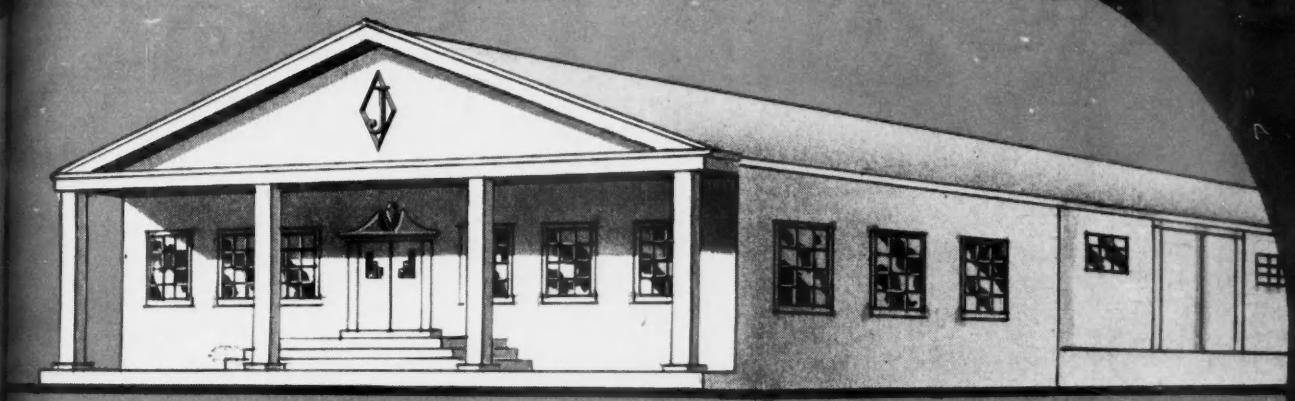
Records for the first seven months of this year show that 2901 exploratory wells have been completed, against 2475 in the same period last year, an increase of 17.2 percent. So far this year, 591 have found production, while last year's

## Results of Exploratory Drilling in July and First 7 Months, 1947-1946, By Districts

| State or District | MONTH OF JULY, 1947 | | | | | | | | | | | | | FIRST SEVEN MONTHS, 1947 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Productive Tests | | | | | | | | | Unproductive Tests | | | Total Exploratory Tests | Productive Tests | | | | | | | | Unproductive Tests | | | | Total Exploratory Tests | |
| | New Fields | | | New Pays | | | Extensions | | | Total Productive | | | | New Fields | | | New Pays | | | Extensions | | | Total Productive | | | | | |
| | Oil | Gas | Dis. | Oil | Gas | Dis. | Oil | Ga | Dis. | | Wildcats | New Pays | Outposts | | Oil | Gas | Dis. | Oil | Gas | Dis. | Oil | Gas | Dis. | 7 Mo. 1947 | 7 Mo. 1946 | Wildcats | New Pays | Outposts | Total Dry 7 Mo. 1947 | Total Dry 7 Mo. 1946 | 7 Mo. 1947 | 7 Mo. 1946 |
| Alabama | | | | | | | | | | | 2 | | | 2 | | | | | | | | | | | | 8 | | | 8 | 6 | 8 | 6 |
| Arizona | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 |
| Arkansas | 1 | | | | | | | | | 1 | 6 | | | 7 | 3 | | | 2 | | 1 | | | | 6 | 4 | 31 | 1 | | 32 | 25 | 38 | 29 |
| California | 2 | 1 | | 2 | | | | | | 5 | 22 | | | 27 | 5 | 1 | | 5 | | | 3 | | | 14 | 19 | 152 | | | 152 | 135 | 166 | 154 |
| Colorado | | | | | | | | | | | 5 | | 1 | 6 | 1 | | | | | | | 1 | | 2 | 4 | 19 | | 6 | 25 | 10 | 27 | 14 |
| Florida | | | | | | | | | | | 2 | | | 2 | | | | | | | | | | | 1 | 18 | | | 18 | 14 | 18 | 15 |
| Georgia | | | | | | | | | | | 2 | | | 2 | | | | | | | | | | | | 3 | | | 3 | 2 | 3 | 2 |
| Illinois | 1 | | | 5 | | | 6 | | | 12 | 40 | | | 52 | 20 | | | 37 | | | 19 | | | 76 | 53 | 208 | | | 208 | 266 | 284 | 319 |
| Indiana | 3 | | | 1 | | | | | | 4 | 5 | | | 9 | 6 | | | 6 | | | 1 | | | 13 | 12 | 57 | | | 57 | 42 | 70 | 54 |
| Kansas | 7 | 1 | | | | | | | | 8 | 29 | | | 37 | 31 | 8 | | | | | 1 | | | 41 | 52 | 185 | | | 185 | 138 | 226 | 190 |
| Kentucky | | | | | | | | | | | 2 | | | 2 | 2 | | | 1 | | | 1 | 1 | | 4 | 10 | 34 | | | 34 | 44 | 38 | 54 |
| Louisiana | 4 | | 2 | 3 | | 1 | 2 | | | 12 | 46 | | | 58 | 12 | 4 | 6 | 15 | | 11 | 4 | | 1 | 53 | 51 | 148 | 3 | | 151 | 106 | 204 | 157 |
| North Louisiana | 2 | | | 1 | | | 1 | | | 4 | 36 | | | 40 | 5 | 1 | 1 | 2 | | | 1 | | 1 | 11 | 13 | 96 | 3 | | 99 | 62 | 110 | 75 |
| South Louisiana | 1 | | 2 | 2 | | 1 | 1 | | | 8 | 10 | | | 18 | 7 | 3 | 5 | 13 | | 11 | 3 | | | 42 | 38 | 52 | | | 52 | 44 | 94 | 82 |
| Michigan | | 1 | | | | | | | | 1 | 18 | | | 19 | 5 | 3 | | | | | 2 | | | 10 | 21 | 107 | 1 | 1 | 109 | 128 | 119 | 149 |
| Mississippi | | | | | | | | | | | 10 | | | 10 | | 1 | | 1 | | | 3 | | | 5 | 4 | 48 | | | 48 | 35 | 53 | 39 |
| Missouri | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | 9 | 11 | 9 | 11 |
| Montana | | | | | | | | | | | 2 | | | 2 | | | | | | | 1 | | | 1 | 2 | 6 | 1 | | 7 | 10 | 8 | 12 |
| Nebraska | | | | | | | | | | | 1 | | | 1 | | | | | | | | | | | | 1 | | | 1 | | 1 | |
| New Mexico | | | | 1 | | | | | | 1 | 5 | 1 | | 7 | 3 | | | 1 | | | 1 | 1 | | 6 | 4 | 31 | 3 | | 34 | 31 | 40 | 35 |
| New York | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 |
| North Carolina | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | 1 | 1 |
| Ohio | | | | | | | | 5 | | 5 | 3 | | | 8 | | 1 | | | | | | 5 | | 6 | 20 | 29 | | | 29 | 23 | 35 | 43 |
| Oklahoma | 4 | 1 | | | | | | | | 5 | 41 | | | 46 | 48 | 7 | 1 | 2 | | | 1 | | | 59 | 74 | 323 | | | 323 | 130 | 382 | 204 |
| Oregon | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | 2 | 1 | 2 |
| Pennsylvania | | | | | | | | | | | 2 | | | 2 | | | | | | | | | | | 2 | 3 | | | 3 | 4 | 3 | 6 |
| Tennessee | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | 9 | 2 | 9 | 2 |
| Texas | 11 | 3 | 4 | 22 | 2 | 3 | 2 | 1 | 2 | 50 | 146 | 6 | | 202 | 86 | 19 | 18 | 98 | 15 | 17 | 20 | 5 | 8 | 286 | 178 | 786 | 24 | 21 | 831 | 766 | 1117 | 944 |
| Dist. 1. S. Central | 1 | | | | | | | | | 1 | 10 | | | 11 | 7 | | | 1 | | | | | | 8 | 7 | 70 | | 1 | 71 | 52 | 79 | 59 |
| Dist. 2. Middle Gulf | | 2 | 2 | 4 | 1 | 2 | | 1 | | 12 | 5 | | | 17 | 6 | 4 | 8 | 10 | 5 | 5 | 1 | 1 | | 40 | 1 | 62 | | 3 | 65 | 1 | 105 | 1 |
| Dist. 3. Upper Gulf | 2 | | 2 | 4 | | | | | | 8 | 18 | | | 26 | 11 | 3 | 7 | 12 | 4 | 6 | 4 | | 3 | 50 | 39 | 87 | | 2 | 89 | 74 | 139 | 113 |
| Dist. 4. L. Gulf-S.W. | 3 | 1 | | 6 | 1 | 1 | | | 1 | 13 | 21 | 1 | | 35 | 14 | 9 | 3 | 26 | 5 | 5 | 1 | 2 | 4 | 69 | 40 | 129 | 1 | 6 | 136 | 167 | 205 | 207 |
| Dist. 5. E. Central | | | | 1 | | | | | | 1 | 7 | 1 | | 9 | | | | 2 | | | 2 | 1 | | 5 | 2 | 34 | 2 | 1 | 37 | 2 | 42 | 2 |
| Dist. 6. Northeast | | | | | | | | | 1 | 1 | 5 | | | 6 | 2 | 1 | | 1 | | 1 | | | 1 | 6 | 15 | 27 | 2 | 1 | 30 | 53 | 36 | 68 |
| Dist. 7-B N. Central | 1 | | | 1 | | | | | | 2 | 24 | 1 | | 27 | 18 | | | 17 | | | 1 | | | 36 | 3 | 134 | 5 | 1 | 140 | 3 | 176 | 3 |
| Dist. 7-C W. Central | 2 | | | | | | | | | 2 | 4 | 1 | | 7 | 7 | | | | | | 2 | | | 9 | 4 | 17 | 2 | 1 | 20 | 4 | 29 | 4 |
| Dist. 8 West | 1 | | | 1 | | | 1 | | | 3 | 14 | 1 | | 18 | 7 | | | 11 | 1 | | 4 | | | 23 | 28 | 68 | 5 | 5 | 78 | 93 | 101 | 121 |
| Dist. 9 North | 1 | | | 5 | | | 1 | | | 7 | 36 | 1 | | 44 | 13 | 2 | | 18 | | | 5 | | | 38 | 49 | 149 | 5 | | 154 | 315 | 192 | 364 |
| Dist 10 Panhandle | | | | | | | | | | | 2 | | | 2 | 1 | | | | | | | 1 | | 2 | | 9 | 2 | | 11 | 12 | 13 | 12 |
| Utah | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 3 | | | 3 | 1 | 3 | 2 |
| Washington | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 |
| West Virginia | | 2 | | | | | | | | 2 | 4 | | | 6 | | 3 | | | | | 3 | 3 | | 4 | | | | | 4 | 7 | 7 | 10 |
| Wyoming | | | | | | | | | | | 3 | | 2 | 5 | 2 | 1 | | 2 | | | 1 | | | 6 | 9 | 15 | 3 | 7 | 25 | 9 | 31 | 18 |
| Total U.S. | 33 | 9 | 6 | 34 | 2 | 4 | 10 | 6 | 2 | 106 | 396 | 7 | 3 | 512 | 224 | 48 | 25 | 170 | 15 | 29 | 58 | 13 | 9 | 591 | 524 | 2239 | 36 | 35 | 2310 | 1951 | 2901 | 2475 |

[1] Dist. 2 included with Dist. 4. [2] Dist. 5 included with Dist. 6. [3] Dist. 7-B included with Dist. 9. [4] Dist. 7-C included with Dist. 8.


NOW.. A "DIAMOND J" STORE IN
CORPUS
CHRISTI



THIS "Diamond J" branch at Corpus Christi represents a new conception in supply store planning. To begin with, it has adopted the amazing idea that the oil man will appreciate a store that is ***attractive,*** in design and appointments. But, more important, it proceeds on the ***conviction*** that he will appreciate the ***Experienced Personnel,*** capable of advising him soundly on equipment problems, the exceptionally complete ***Stocks*** of highest grade equipment, and the ***Fast Service*** which he will find accompanies every order.

***Now 31 Stores Serving 8 Oil States***

**Jarecki Manufacturing Company—Houston, Texas**

Sales Offices: Dallas, Texas, and Wichita, Kansas. Home Office and Factory, Erie, Pa.

SINCE 1852

JARECKI OIL INDUSTRY SUPPLIES

netted 524 producers. Although there were fewer successes last year than in the current period, the percentage of producers to dry holes was slightly higher. In last year's seven months, successful exploratory wells accounted for 21.2 percent of the total drilled, while this year the score was 20.4 percent.

Discoveries of new sources of oil increased from 284 last year to 394, a gain of 38.7 percent. These included 224 new fields this year against 165 and 170 new pay horizons in established fields to 119. However, major extensions to oil fields dropped from 93 to 58.

Distillate discoveries increased from 39 a year ago to 54. These included 25 new fields this year compared with 19, and 29 new pays compared with 20. Extensions increased from four to nine so far this period.

Gas discoveries for this year decreased in all categories from last year's seven-month period. New gas fields dropped from 58 a year ago to 48 and new pays numbered 15 against last year's 19. Gas field extensions decreased from 27 to 13.

Of the 2901 exploratory completions made this year, 2536 or 87.4 percent were strict wildcats. In last year's comparable seven months 2148 out of the total of 2475 wells were wildcats, which was 86.8 percent. The remainder were attempts to find additional pay strata in existing fields or to extend the boundaries of known fields by at least ½ mile. The results of wildcatting this year were 297 strikes, 11.7 percent of the total, while last year 242 successful wildcat wells amounted to 11.3 percent.

### Texas Exploration

Exploration in Texas during this year's first seven months resulted in 1117 wells being completed, while a year ago only 944 had been drilled. Of these ventures, 286 were productive this year against 178 a year ago. These productive exploratory wells included discoveries and extensions of all classes, but probably the most significant were 86 new oil fields and 98 new horizons this year.

Louisiana's exploratory drilling netted 53 producers out of 204 wells this year, while a year ago it had a better record of 51 producers out of only 157 completions. Oklahoma's score this year doesn't compare very favorably with last year with only 59 successful wells out of 382 completions, while a year ago the score stood at 74 producers from 204 holes.

California's record shows little change from a year ago with 166 tests netting 14 successful completions and 154 a year ago bringing 19 strikes. Arkansas gained six producers out of 38 tries so far this year against four out of 29 last year.

Bettering last year's score of 53 successes out of 319 wells, Illinois this year has made 76 strikes from 284 exploratory attempts. Indiana has not fared as well, hitting only 13 out of 70 against last year's 12 for 54 tries.

Exploration has been stepped up in Kansas this year, but results have not been in line with the previous year's record. So far 226 exploratory wells gave Kansas 41 producers, while a year back 190 had yielded 52 that found the pay. Michigan lowered its drilling rate slightly, but cut its successful wells in half. A year ago Michigan's 149 completions accounted for 21 successful finds, but this year's 119 wells could net only ten strikes.

### Rocky Mountain Increase

In the Rocky Mountain region, exploration has been on the increase, but finding production seemed a bit more difficult than it was a year ago. In Colorado, 27 wells have been completed this year with only two of them good for production, a year ago by this time 14 attempts had found four productive. One out of eight is the score so far in Montana, not very different from last year's two from 12. Thirty-one tests in Wyoming yielded six producers this year, while last year's 18 gave up nine.

Not only were July's 512 exploratory completions the most for any month this year, but the number of successful wells also topped the other period's records. The 106 producers accredited to July amounted to 20.7 percent of the total exploratory wells completed, and that was slightly higher than the overall average for the year. New oil discoveries for the month numbered 67. There were 33 new fields and 34 new pay horizons. Oil field extensions amounted to ten. Six new fields and four new pays made up the distillate discoveries for the month, and two distillate fields' boundaries were extended. Gas finds numbered 11, new fields 9 and new pays 2, and there were 6 gas field extensions.

Texas accounted for almost one-half of the successful exploratory wells completed in the U. S. during July. Of the 106 total, Texas contributed 50. These included 11 new oil fields, 22 new oil pays and 2 oil field extensions. Also included were 4 distillate fields, 3 new distillate pays and 2 extensions. Texas' gas finds were 3 new fields, 2 new pays and 1 extension.

## Montana Refinery Planned

Contract for the construction of an $8½ million refinery at Billings, Mont., has been awarded Jones & Laughlin Supply Company, Tulsa. W. H. Ferguson, executive vice president of Continental Oil Company, which will operate the refinery, said construction will be under way next spring. The plant will have a daily crude capacity of approximately 7500 barrels. The plant will include a tank farm for storage of approximately 700,000 barrels of crude.

## New Oil, Distillate and Gas Fields and New Pay Horizons Discovered in the United States in July, 1947

### Also Important Extensions to Established Fields

| COUNTY | FIELD | COMPANY, WELL AND LOCATION | Date Spudded | Date Completed | Total Depth (Feet) | Completion Horizon (Feet) | [1]Name, Character and Age of Producing Formation | [2]Initial Production Method and Choke | Gravity of Oil | [3]Structure; [4]Method of Discovery | Tentative Evaluation of Discovery or Extension (Opinion of Relative Importance of Area from General Viewpoint of the Industry Based on Pertinent but Necessarily Incomplete Data; Later Development or More Complete Data Obviously Might Require Revision of this Tentative Opinion). |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Union | | **ARKANSAS—New Oil Field** | | | | | | | | | |
| | | R. R. Wallingsford's J. R. Winn 1, c ne ne se 14-18s-13w, near Urbana fld | 12–26–46 | 7–13–47 | 3604 | 3494– 3500 | Travis Peak (?) sd; L. Cre. | F 200; ⅛" | .... | ..... | ..... |
| | | **CALIFORNIA New Oil Fields** | | | | | | | | | |
| Los Angeles | | Shell Oil Co's Union-Poindexter 1, 12-3s-14w, 1 mi nw of Athens fld | ..... | 7– –47 | 9272 | 8882– 9255 | Miocene | P 122; 5 wtr | 30.7 | ..... | ..... |
| Santa Barbara | | Sunray Oil Corp's Los Flores 1, 4-8n-33w, 1 mi se of Orcutt fld | ..... | 6– –47 | 5998 | 4805– 4830 | Miocene | F 312; ½" | 35.4 | ..... | Important, as it provides high gravity crude in heavy crude area. |
| Kern | Salt Creek | **CALIFORNIA—New Oil Pays** | | | | | | | | | |
| | | Independent Exploration Co's Cymric 11, 21-29s-21e | ..... | 7– –47 | 4923 | 4885– 4915 | Oceanic sd; Mio | F 540; ¼" | 38.2 | ..... | This pay is productive in Cymric fld, short distance south. |
| Los Angeles | Long Beach | Shell Oil Co's Dolley 2, 29-4s-12w | ..... | 7– –47 | 10544 | 10056–10192 10247–10317 | Miocene | F 750; ¼" | 32.7 | ..... | To result in substantial drlg on se side of fld. |
| Kern | ..... | **CALIFORNIA—New Gas Field** | | | | | | | | | |
| | | Rothschild-Bender Oil Operations' Sheep Springs 8, 17-29s-21e, 1½ mi nw Cymric fld | ..... | 7– –47 | 4904 | 4320– 4840 | Oceanic sd; Mio | 29 mln; open | .... | ..... | ..... |
| Marion | Iuka | **ILLINOIS—New Oil Field** | | | | | | | | | |
| | | J. H. Gilliam's H. Ebe 1, ne ne nw 14-2n-4e | 6–26–47 | 7–29–47 | 2962 | 2952– 2962 | Ste. Gen. | P 20 bbls | 34 | ..... | ..... |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **ILLINOIS—New Oil Field** | | | | | | | | | |
| Marion | Iuka | J. H. Gilliam's H. Ebe 1, ne ne nw 14-2n-4e | 6-28-47 | 7-29-47 | 2886 | 2872- 2880 | St. Louis li; Miss | P 252; 100 wtr | .... | | 4 mi fr nearest prod., the 1-well Xenia pl, and 7½ mi fr nearest important pl |
| | | **ILLINOIS—New Oil Pays** | | | | | | | | | |
| Clay | Hoosier, N. | Evans & Barrow's I. Brooks Comm. 1, ne nw ne 35-5n-7e | 6-25-47 | 7-29-47 | 2905 | 2881- 2886 | Lwr O'Hara li; Miss | P 20 | .... | | Previous prod fr Aux Vases sd and McCloskey li. |
| Edwards | Bone Gap, S. | Calvert & Willis' Briggs 1, ne nw se 19-1s-14w | 7- 4-47 | 7-29-47 | 3090 | 3015- 3027 | Aux Vases sd; Miss | P 125 | .... | | Previous prod fr McClosky li and Cypress sd. |
| Gallatin | Herald, E. | Joe Reznik's C. Glover 1, ne ne nw 24-7s-9e | 6- 5-47 | 7-22-47 | 3093 | 2924- 2939 | Aux Vases sd; Miss | P 194 | .... | | Previous prod fr Waltersburg sd. |
| Gallatin | Junction | C. E. Skiles' Stinson 1, (OWWO) nw sw ne 9-9s-9e | ..... | 7-22-47 | 2012 | 1429- 1450 | Pennsylvania sd; Penn | P 17 | .... | | Other wells produce fr Waltersburg sd. Also 1¾ mi ne ext to pl, with several dry holes intervening. |
| Marion | Miletus | National Assoc. Pet. Co's W. Adams 1, nw se ne 21-4n-4e | 6-10-47 | 7-29-47 | 2418 | 2347- 2365 | McClosky li; Miss | P 42; 47 wtr | .... | | Deepest pay in pl. Previous prod fr Aux Vases and Bethel sds. |
| | | **ILLINOIS—Oil Field Extensions** | | | | | | | | | |
| Clay | Sailor Springs Consol. | E. A. Obering's Armstrong 1, ne ne se 20-3n-7e | 6-27-47 | 7-29-47 | 2992 | 2978- 2985 | McClosky li; Miss | P 105; 11 wtr | .... | | ¾ mi sw extension to pool. |
| Effingham | Lillyville | National Assoc. Pet. Co's J. J. Schniederjan 1, 1120 fr nl 300 fr wl (frac) sec. 6-8n-7e. | 6-24-47 | 7-22-47 | 2416 | 2403- 2412 | McClosky li; Miss | P 90 | .... | | ½ mile extension to pool. |
| Jefferson | Woodlawn | C. E. Townsend's O. Watkins et al 1, ne nw ne 25-2s-1e | 6-10-47 | 7- 8-47 | 2036 | 2026- 2031 | Bethel sd; Miss | P 72 | .... | | ¾ mi ne extension to pool. |
| Wayne | Clay City Consol. | Robinson & Puckett's M. Shackleford 1, nw ne sw 2-1n-8e | 6-21-47 | 7-15-47 | 3091 | 3072- 3090 | Rosiclare li; Miss | P 200 | .... | | ½ mile extension to pool. |
| Wayne | Geff, W. | Nation Oil Co's W. G. Cisne 1, nw nw nw 10-1s-7e | 6-25-47 | 7-29-47 | 3126 | 3098- 3117 | Aux Vases sd; Miss | P 35; 25 wtr | .... | | 1 mi ne ext to pl and approx same distance w of Cisne pl. Sw offset completed and several near-by locns drlg |
| White | Herald | Central Pipe Line Co's T. Poole 1, nw sw ne 25-6s-9e | 6- 2-47 | 7- 8-47 | 3141 | 2962- 2967 | Lwr O'Hara li; Miss | P 121; 40 wtr | .... | | ¾ mi n of a 1-well ext to pool, but 1¾ mi e of pl. |
| | | **INDIANA—New Oil Fields** | | | | | | | | | |
| Gibson | | Lynch Oil Co's Perry Fleener 1, nw se sw 22-3s-12w, 2½ mi w Owensville pl | 5- 7-47 | 6- 1-47 | 1880 | 1872- 1880 | Waltersburg sd; Miss | Sw 245 | .... | | |
| Knox | | H. E. Ledbetter's Elkins 1, nw sw ne 12-1s-12w, 2 mi ne Mt. Carmel pl | ..... | 7- -47 | 2170 | 2156- 2164 | Bethel sd; Miss | Sw 220 | .... | | |
| Pike | Coe | Ralph Halbert et al's Ayrshire Collieries 1, sw se sw 30-2s-7w | ..... | 7- -47 | 1409 | 1403- 1407 | McClosky li; Miss | F 60; on choke | .... | | |
| | | **INDIANA—New Oil Pay** | | | | | | | | | |
| Pike | Union-Bowman | Hoosier Pipe Line Corp's Elmer J. Walker 1, ne se sw 22-1n-9w | ..... | 7- -47 | 1513 | 1501- 1513 | Aux Vases sd; Miss | P 71 | .... | | Would prod considerably more on open flow. |
| | | **KANSAS—New Oil Fields** | | | | | | | | | |
| Butler | | Aikman & Braden's Anderson 1, nw 15-27s-4e, 1 mi e Augusta, N pl | ..... | 7-16-47 | 2023 | 1996- 2010 | Kansas City li; Penn | P 8 | .... | Ant; dr | No importance. |
| Cowley | | Mid-Plains Oil Co. et al's Reidy 1, ne nw nw 15-32s-7e, 5 mi se Estes gas pl | ..... | 7-15-47 | 2945 | 2817- 2827 | Bartlesville sd; Penn | P 25; 50 wtr | .... | Pos'ble trp; dr | No importance due to amount of water. |
| Ellis | | Keyes Drlg Co's Marshall 1, nw 25-11s-18w, 2 mi s Burnett pl | ..... | 7-10-47 | 3624 | 3618- 3624 | Arbuckle li; Ord | F 3000 | .... | Ant; seis | Rate of fl based on state potential of 3000 BPD; maximum well. Echo potential 3485 BPD. |
| Ellis | | Derby Oil Co et al's Koerner 1, cnw ne se 11-12s-18w, 1 mi fr Walters pl | ..... | 7-16-47 | 3641 | 3638- 3641 | Arbuckle li; Ord | P 356 | .... | Ant; seis | |
| Marion | | Leiker Oil Co et al's Henke 1, sw se sw 33-18s-4e, 3 mi ne Propp gas fld | ..... | 7-17-47 | 2446 | 2380- 2390 | Chattanooga li; Miss | P 25 | .... | Ant; dr | No importance. |
| Rush | | Great Lakes Carbon Co. et al's Dirks 1, sw sw se 16-18s-18w, 12 mi w Otis pl | ..... | 7-27-47 | 3868 | 3836- 3851 | Arbuckle li; Ord | P 122; 62 wtr | 42 | Ant; seis | |
| Stafford | | Brunson Oil Co et al's Howard 1, nw nw se 15-22s-13w, 1 mi s Drach, W pl | ..... | 7-16-47 | 3793 | 3682- 3752 | Viola li; Ord | P 307 | 34 | Ant; seis | |
| | | **KANSAS—New Gas Field** | | | | | | | | | |
| Woodson | | King Oil Co et al's Teichnor 1, se 24-23s-15e, 4 mi e Evans pl | ..... | 7-18-47 | 1488 | 1457- 1488 | Mississippi li; Miss | 1 mln | .... | Ant; dr | No importance. |
| | | **NORTH LOUISIANA—New Oil Fields** | | | | | | | | | |
| Natchitoches | | J. F. Lent's E. L. Whatley 1, 1980 fr nl 1780 fr el, 20-10n-10w | 3-31-47 | 6-11-47 | 3520 | 3270- 3295 | Paluxy sd; L. Cre | P 18; 28 wtr | 41 | | |
| Red River | | R. O. Roy-British American's Trixie Wimberly 1, nw sw se 2-13n-10w, Ashland area. | 3-16-47 | 7-10-47 | 7508 | 2676- 2679 | Eagleford sd; U. Cre | P 10; 200 wtr | 41.6 | | Confirmation well, Wimberly 2, abnd at 2711 ft. |
| | | **NORTH LOUISIANA—New Oil Pay** | | | | | | | | | |
| Caddo | | Chas. C. Lowery's Stiles 1, 1180 fr el 522 fr sl, 17-21n-16w | 6-13-47 | 7-11-47 | 2512 | 2284- 2306 | ..... | F 40 | .... | | |
| | | **NORTH LOUISIANA—Oil Field Extension** | | | | | | | | | |
| Union | Ora | Sellars-Wilson-Ewing Co's Perry J. Tucker 1, 3-12n-1w | ..... | 7- 47 | 2565 | 2140- 2150 | Nacatoch sd; U. Cre | F 240 | .... | | 2 mi sw extension to pool. |
| | | **SOUTH LOUISIANA—New Oil Fields** | | | | | | | | | |
| Avoyelles | Eola, SW | Atlantic's Haas Investment Co. 1, swc 10-2s-2e, 1½ mi w of m/sly Eola prod. | 4-26-47 | 6-23-47 | 8661 | 8562- 8572 | Wilcox sd; Eoc | F 186; 5/32" | 44.7 | | |
| Calcasieu | Moss Lake | Sun's La. Farm & Livestock Co. 1, 2880 s 1080 w of nec 7-11s-9w, 2 mi w Moss Lake, E. gas prod. | 3-30-47 | 7-16-47 | 10152 | 8844- 8848 | ..... | F 136; 1/8" | 37 5 | | |
| | | **SOUTH LOUISIANA—New Oil Pays** | | | | | | | | | |
| Jeff Davis | Welsh Dome NW | Flk Stanolind's T. S. Stegal 1, (OWWO), 2300 s fr nwc Sect 21 th 300 e to lcn in 21-9s-5w. | ..... | 7-10-47 | 8233 | 6546- 6566 | ..... | F 112; ¼" | 38.2 | | This is disc. well for the fld (Feb., 1947). 6843 ft. pay went to salt wtr; Reworked for new shallower pay. |
| Cameron | Cameron Meadow | Magnolia's Cameron Meadows Ld. Co. 46, (OWDD) 1584 w of nec 28-14s-13w, 500 se No. 45 dp sd disc. | 3-15-47 | 7-14-47 | 8920 | 8825- 8840 | ..... | F 114; 5/64" | 41.5 | | |
| | | **SOUTH LOUISIANA—Oil Field Extension** | | | | | | | | | |
| Calcasieu | Edgerly | L. E. Richey's L. E. Richey Embry 1, 1141 n 148 w of Sec ne¼ Sect. 29-9e-11w | ..... | 7- -47 | 3077 | 3060- 3077 | ..... | P 23 | 22.2 | | ¾ mi w extension. |
| | | **SOUTH LOUISIANA—New Distillate Fields** | | | | | | | | | |
| Jefferson | Barataria, S. | The California Co's E. P. Brady et al Unit 1, beg swc unit 119, th s 74 deg. 24 min w 1214, th s 14 deg 36 min e 450 to lcn, 2-16-23e. | 4-28-47 | 7-18-47 | 12307 | 11821-11866 | ..... | F 168; 5.7 mln; ¼" | 48.8 | | Flowed estimated 240 mln cu ft on open calculation. |
| Jefferson | Queen Bess Island | The Texas Co's Lafourche Basin Levee Dist. 1, 1500 s 300 e of nwc 30-20s-25e | 11-18-46 | 7-26-47 | 15523 | 13879-13904 | ..... | F 49; 6.2 mln; ¼" | 44.1 | | World's deepest producer; slightly deeper than Weeks Island, Iberia Parish. |
| | | **SOUTH LOUISIANA—New Distillate Pay** | | | | | | | | | |
| Calcasieu | Iowa | Magnolia Pet. Co's B. T. Wait 20, 660 n 330 w of sec Sect. 12-9s-7w | 3- 8-47 | 7-23-47 | 10107 | 9476- 9478 | ..... | F 181; 2.2 mln; 5/32" | 43.7 | | First test to go to salt and deepest for the field. |
| | | **MICHIGAN—New Gas Field** | | | | | | | | | |
| Newaygo | Big Prairie | Sun Oil Co's Westcott 1, sw sw nw 33-13n-11w, 10 mi ne Kimball Lake | 6-15-47 | 7-31-47 | 3102 | 2895- 2897 | Dundee li-dolo; Devo | .6 mln | .... | Ant; cd | Little importance. |
| | | **NEW MEXICO—New Oil Pay** | | | | | | | | | |
| Lea | | Amerada Pet. Corp's J. G. Hare 6, 1980 fr nsl 760 fr ewl 33-21s-37e, nw edge Ellenburger prod in Brunson ar. | 5-22-47 | 7-28-47 | 8165 | 7780- 7830 | Simpson sd; Ord | F 982; ½" | 41 | Ant; geol | Completed in Ellenburger (structurally low) but due to sharp prod decline plugged back and perf opposite Simpson, which had indicated flow prod but passed by other Ellen completions. State's 1st prod for this sd. |
| | | **OHIO—Gas Field Extensions** | | | | | | | | | |
| Holmes | Miley Crossroads | Ohio Fuel Gas Co's Myrtle Lake 1, sw ne 32, Ripley twp. ½ mi ne ext | ..... | 6- -47 | 3171 | 3165- 3171 | Clinton sd; Sil | 1.3 mln | .... | | Connects this pool with the Big Prairie pool to the n. |
| Lorain | Pittsfield | Ohio Fuel Gas Co's Edward Miller 1, Lot 98 | ..... | 7- -47 | 2200 | 2190- 2198 | Second Clinton sd; Sil | 2 mln; open | .... | | ½ mi n extension. |
| Lorain | Pittsfield | Ohio Fuel Gas Co's W. D. McConnell 1, Lot 103 | ..... | 6- -47 | 2214 | 2206- 2214 | Clinton sd; Sil | 1.8 mln; open | .... | | ½ mi e extension. |
| Muskingum | Blue Rock | B. G. Bartley's Lucile Aston 1, nw ne 29 | ..... | 6- -47 | 4346 | 4339- 4346 | Clinton sd; Sil | .7 mln; open | .... | | 1¼ mi extension. |
| Perry | Sayre | Ohio Fuel Gas Co's J. A. Wells 1, Sect 11, Bearfield twp. | ..... | 6- -47 | 3845 | 3815- 3845 | Clinton sd; Sil | .8 mln | .... | | ⅜ mi extension. |

# New Oil, Distillate and Gas Fields and New Pay Horizons Discovered in the United States in July, 1947

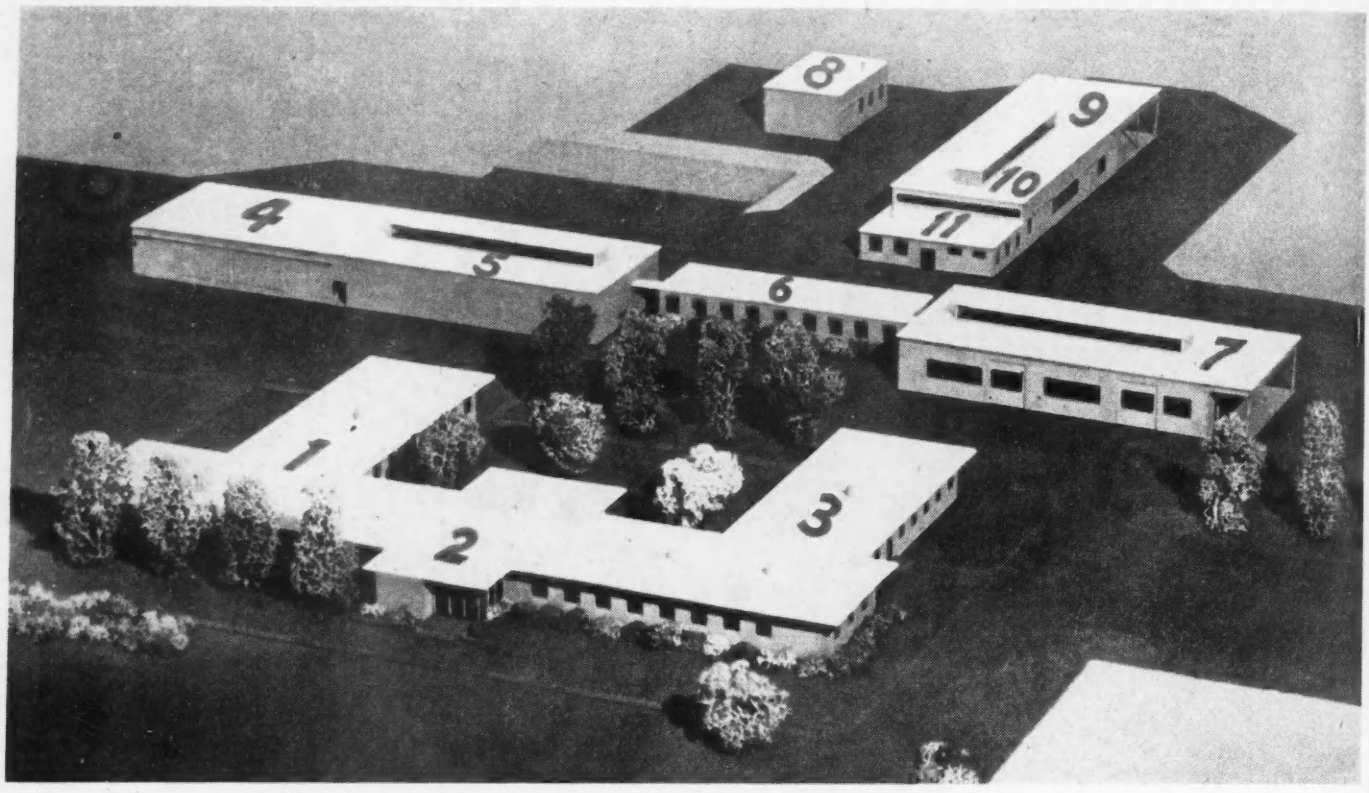
## Also Important Extensions to Established Fields

| COUNTY | FIELD | COMPANY, WELL AND LOCATION | Date Spudded | Date Completed | Total Depth (Feet) | Completion Horizon (Feet) | [1]Name, Character and Age of Producing Formation | [2]Initial Production Method and Choke | Gravity of Oil | [3]Structure; [4]Method of Discovery | Tentative Evaluation of Discovery or Extension (Opinion of Relative Importance of Area from General Viewpoint of the Industry Based on Pertinent but Necessarily Incomplete Data; Later Development or More Complete Data Obviously Might Require Revision of this Tentative Opinion). |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **OKLAHOMA—New Oil Fields** | | | | | | | | | |
| Cotton | | Nixon Petroleum Co. et al's Warren 1, se 1-5s-13w, 12 mi sw Cache Creek pl. | | 7-25-47 | 1623 | 1596- 1616 | Megargel sd; Penn | P 13; 6 wtr | 40 | Str trp; dr | No importance. |
| Garvin | | Magnolia Pet. Co's Lacy 1, cen se nw¼, 5-4n-3w, 1 mi e Lindsay, E. pl. | | 7-31-47 | 10250 | 9731-10250 | Upper Bromide sd; Ord | F 1128 | 45 | Ant; seis | Well is on Lindsay, E. trend; may prove to be extension to this prolific fld. |
| McClain | | Dearing, Inc.'s Howard 1, cnw nw 15-5n-2w, 3 mi nw Wayne, SW area | | 7- 8-47 | 7200 | 7004- 7078 | Basal Deese sd; Penn | F 20; 3/8" | 41.4 | Ant; seis | No importance. |
| Garvin | | O. L. Ledgerwood's Hope 1 (OWWO), ne nw se 32-4n-2w 2 mi se Maysville, SW pl. | | 7- 9-47 | 7000 | 6236- 6255 | Pennsylvania sd; Penn | F 40; 1/4" | 41 | Ant; seis | Old well plugged back. |
| | | **OKLAHOMA—New Gas Field** | | | | | | | | | |
| Hughes | | Mid-Continent Pet. Corp's Meadors 1, nw nw nw 36-9n-10e, 1 mi n Creek dist. | | 7-31-47 | 3197 | 2250- 2280 | | 2.1 mln | | Str trp; dr | No importance; in a general gas-producing area. |
| | | **TEXAS DISTRICT 1 (SOUTH CENTRAL)—New Oil Field** | | | | | | | | | |
| McMullen | | I. K. Howeth (was Dee Davenport's) Annie G. Dolph et al 2-A, (OWWO) 2970 fr nl 330 fr wl Sect 53 H. Pressler Sur, Shiner Rch area. | | 7-15-47 | 1398 | 1386- 1398 | | P 1 | | | No importance. |
| | | **TEXAS DISTRICT 2 (MIDDLE GULF COAST)—New Oil Pays** | | | | | | | | | |
| Jackson | Harmon (Ganado) | W. P. Taylor-Jos. Harnberger Jr.'s A. A. Egg 1, 1400 fr el 1880 fr nl GF&MT Simons Sur. 24. | 5-23-47 | 6-18-47 | 6860 | 6514- 6518 | | F 198; 5/32" | 36.9 | | |
| Refugio | Bonnie View | United Prod Co's Emil Niemann 9, 330 fr el 2230 fr sl 157.01-ac lse and 2½ frac Sect 26, Johnson & Pugh Sbdn of Bonnie View Rch. | 6- 8-47 | 7-23-47 | 6965 | 5399- 5403 | | F 128; 1/8" | 30 | | |
| Refugio | La Rosa | Stanolind's B. D. Rooke 37, 1025 fr el 3960 fr sl 3209-ac lse, J. M. Aldrete Gr. | 5- 6-47 | 7-25-47 | 9524 | 6844- 6848 | | F 187; 1/8" | 44 | | |
| Victoria | McFaddin, E. | Union Prod. Co's A. M. McFaddin 7-A, 3340 wsw at ra fr e'ly/1 of 4680-ac. "A" lse, M. J. Traviesa Gr. | 6- 9-47 | 7-27-47 | 7715 | 5935- 5942 | | F 92; 1/4" | 38.4 | | First oil production in this gas field. |
| | | **TEXAS DISTRICT 2 (MIDDLE GULF COAST)—New Distillate Fields** | | | | | | | | | |
| Bee | Minoak | Rowan & Hope's Rio Oil Corp. 1, 467 fr sel 3670 fr swl J. R. Carney Sur. A-1209, 2 mi sw Yoward fld. | 6- 1-47 | 7-25-47 | 7868 | 7530- 7550 | Slick sd; Eoc | F no gge; 70 mln; open | | | Also tested good for gas-dist at 7841-68 in Massive Wilcox zn. |
| Lavaca | Halletsville | Forest Oil Corp's H. C. Obelgoner 1, 467 fr sw&el 96-ac lse, Jas. Campbell Sur 2. 2 mi n of Halletsville. | 4-24-47 | 7-12-47 | 9001 | 7510- 7516 | | F no gge; 40 mln; open | | | |
| | | **TEXAS DISTRICT 2 (MIDDLE GULF COAST)—New Distillate Pays** | | | | | | | | | |
| Lavaca | Yoakum | Pure's J. D. Turner 1, 1310 fr nwl 11,000 fr swl Jas. May Sur A-33 | 5-15-47 | 7- 8-47 | 8701 | 8635- 8675 | Wilcox sd; Eoc | F 25; 1.9mln; 32/64" | 53.1 | | |
| Live Oak | Kittie West | Continental's Kittie West Schreiner 1-A, 450 fr swl 1650 fr sel J. Poitevent Sur. 80-ac "A" lse. | 6-10-47 | 7-21-47 | 7400 | 6878- 6885 | Luling sd; Eoc | F 26; 1.6 mln; 32/64" | 42.8 | | |
| | | **TEXAS DISTRICT 2 (MIDDLE GULF COAST)—New Gas Fields** | | | | | | | | | |
| Jackson | Salem | Texas Co's S. G. Drushell et al 1, 330 fr nw&swl I&GNRR Sur, 277.06-ac lse | 6-30-47 | 7-14-47 | 5018 | 2560- 2565 | | 1.6 mln; 1/4" | | | |
| Refugio | | La Gloria Corp.-Skelly's Jamie Hynes 2, 7200 fr wl 60 fr sl John Malone Sur. n of Refugio fld, w of Fox fld. | 5-16-47 | 7- 6-47 | 7212 | 6019- 6029 | | 120 mln; open | | | |
| | | **TEXAS DISTRICT 2 (MIDDLE GULF COAST)—New Gas Pay** | | | | | | | | | |
| Calhoun | Matagorda Bay | Texas Co's State Tr 130-1, 330 fr n&wl State of Texas Tr 130 in Matagorda Bay. 5½ mi n ne Port O'Connor. | 6-16-47 | 7- 1-47 | 5780 | 4622- 4630 | Sd; Miocene | 17.5 mln; open | | | |
| | | **TEXAS DISTRICT 2 (MIDDLE GULF COAST)—Gas Field Extension** | | | | | | | | | |
| Bee | Blanconia | Stanolind's Michale Fox Est. 2-B, 1650 fr sl 1250 fr wl J&M Keating Sur. | 5-19-47 | 6-26-47 | 5514 | 4138- 4148 | Frio sd; Olig | 13.5 mln; open | | | ½ mi n nw extension. |
| | | **TEXAS DISTRICT 3 (UPPER GULF COAST)—New Oil Fields** | | | | | | | | | |
| Burleson | | Creslenn Oil Co's Nellie K. Gramm 1, 2500 fr sl 1320 fr el Eliza Sante Sur, 221-ac Tr. Chriesman area. | 4- 7-47 | 5-27-47 | 3495 | 3440- 3450 | P 19 | 38.3 | | | |
| Wharton | | Floyd L. Karsten's Frank Beal 1, 467 fr n&el of 160 ac lse, se¼ Sect. 51, ETRR Sur, A-119. El Campo, S. area. | 6- 9-47 | 7- 7-47 | 7050 | 5561- 5564 | | F 83; 40 wtr; 3/64" | 32 | | |
| | | **TEXAS DISTRICT 3 (UPPER GULF COAST)—New Oil Pays** | | | | | | | | | |
| Liberty | Hull | Texas Co's Armelin Fee 4, 150 fr el 650 fr sl 98-ac lse, S. S. Wickliff Sur. | 6-16-47 | 7-10-47 | 6005 | 5396- 5399 | | F 194; 7/64" | 34.8 | | |
| Wharton | Hutchins, S. | McDannald Oil Co's K. C. Martin 2, 520.7-ac lse, I&GN Sur Sect. 15, 16, 17, 21, 22, drill site in Sect 22. | 5- 2-47 | 7- 7-47 | 6515 | 5735- 5737 | | F 45; 3/32" | 28.9 | | |
| Wharton | Hutchins, S. | Perry R. Bass et al's Lacy W. Armour et al 5, 346.61-ac lse, I&GN Sur 20, 21, 22, 23. | 6-12-47 | 7- 8-47 | 6000 | 5852- 5855 | | F 26; 3.2 mln; 1/4" | 47.6 | | |
| Orange | Orange, W. | G. E. Glasco's Lutcher & Moore 1, (OWWO), 1600 fr sl 660 fr el 250-ac. lse, Wm Dyson Sur. | | 7-24-47 | 6975 | 3475- 3485 | Sd; Miocene | F 246; 5/16" | 24 | | |
| | | **TEXAS DISTRICT 3 (UPPER GULF COAST)—New Distillate Fields** | | | | | | | | | |
| Chambers | | Kirby Pet. Co's Fee Tr 20-1, 4950 fr el 1845 fr sl, C. Smith Sur, se Cedar Bayou area. | 5-10-47 | 6-14-47 | 8015 | 6312- 6316 | | F 39; 1.3 mln; 3/16" | 49.6 | | |
| Wharton | | Ralph H. Grant-J. P. Petkas' M. F. Rooker 1, 444.7 fr n&sl 330 fr wl 80-ac lse, B. B. Pearce Sur. | 6- 5-47 | 7-27-47 | 5812 | 4049- 4055 | | F 13; 76 mln; open | 37.6 | | Excellent gas-dist producer. Well is credited with several other sds which are unconfirmed. |
| | | **TEXAS DISTRICT 4 (LOWER GULF-SOUTHWEST)—New Oil Fields** | | | | | | | | | |
| Aransas | Fulton Beach | William Herbert Hunt Tr. Est.-Geo. W. Graham's Spencer-Kent-Crane 1, 1400 fr sl 2333 fr el 720-ac lse, C. O. D. Gilliland Sur. 4½ mi n ne Rockport. | 5-29-45 | 7- 7-47 | 8370 | 7048- 7065<br>7126- 7136 | | F no gge; 5.1 mln; open<br>F 186; 3/64" | Dist<br>43.2 | | Dually completed as oil & distillate. Offset now drlg. |
| Duval | "76" | Magnolia Duval Co. Rch. Co. State 2, 330 fr nl 2500 fr wl CCSD&RGNG Sur 76, 400-ac. lse, 2540 ne No. 1 (76) gas disc well at "76" fld. | 7- 4-47 | 7-20-47 | 1329 | 1322- 1327 | Cole sd; Eoc | P 67 | 18.7 | | Well found oil in fld that had previously prod only gas fr the same level. |
| Kleberg | Ricardo, N. | Stanolind's J. O. Johnson 2, 467 fr s&el lot 14, Blk 30 Kleberg Town & Impr. Co. Sbdn, Rincon de Sta. Gertrudis Gr. | 2- 2-47 | 7-24-47 | 9798 | 6040- 6046 | | F 74; 5/16" | 43 | | |
| | | **TEXAS DISTRICT 4 (LOWER GULF-SOUTHWEST)—New Oil Pays** | | | | | | | | | |
| Brooks | La Gloria | Magnolia's T. S. Proctor 4, 330 fr sl 660 fr wl (at ra) of lot 11, Blk 2, Falfurrias Fm & Gdn Tr. 195.54-ac lse, se flk of fld. | 4- 2-47 | 6-29-47 | 7710 | 7482- 7493 | Proctor sd | F 24; 1/4" | 42 | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Duval | Piedras Pintas (Segment "A") | H. H. Howell's G. B. Parr 9, 2320 fr sl, 2747 fr el J. Pointevent Sur. 185 | 7- 6-47 | 7-28-47 | 3496 | 3152- 3157 | | F 240; 4/16" | 44.2 | | |
| Kleberg | Borregas | Humble's King Rch-Borregas 15, 2640 s&w fr No. 7 well, 24350-ac lse, Sta. Gertrudis Gr. | 6-13-47 | 7-12-47 | 7500 | 5148- 5155 | | F 99; 1/8" | 42 | | |
| San Patricio | Midway | F. M. Boykin, Jr.'s C. V. Jones 10, on a 200-ac. e½ Sect 72, Geo. H. Paul Sbdn Coleman-Fulton Pstr Lds. | 6-27-47 | 7-17-47 | 5134 | 5044- 5047 | | F 122; 1/8" | 29 | | |
| Jim Wells | Haldeman, S. | Sunray's C. T. Hewitt 1-D, 330 fr n&el w½ Sect. 51 R. P. Haldeman Sbdn. Seeligson Rch. 320-ac "D" lse. | | 7-16-47 | 6000 | 4195- 4211 | | F 124; 5/32" | 43.9 | | |
| Brooks | La Gloria | Ralph E. Fair-Jack Woodward's Fee 10 (OWDD), 330 fr el 990 fr nl lot 4, Sect. 12, Falfurrias Fm and Gdn Tr, 256.11-ac lse. | | 6-23-47 | 8306 | 6882- 6892<br>6980- 6990 | La Gloria-Hammond sd<br>La Gloria-Atlee "A" sd | F 183; 3/64"<br>F 171; 3/64" | 41<br>42.6 | | Well credited with 2 new pays. |
| | | **TEXAS DISTRICT 4 (LOWER GULF-SOUTHWEST)—New Distillate Pay** | | | | | | | | | |
| Jim Wells | Wilson | Magnolia's N. L. Russell 2, 330 fr n&el lot 11, Ed. C. Lassiter Sbdn, El Paisano Gr. 3900 se Russell 1, gas well. | 5-11-47 | 7-12-47 | 8500 | 7158- 7170 | | F 101; 3.6 mln; 11/32" | 56.9 | | |
| | | **TEXAS DISTRICT 4 (LOWER GULF-SOUTHWEST)—Distillate Field Extension** | | | | | | | | | |
| Hidalgo | McAllen | Coastal Refineries-Mayfair Minerals' J. J. Lynn 1, (OWDD) 520 fr nwl lot 202, Kelly-Pharr Sbdn, 120-ac lse. | | 7-12-47 | 8330 | 7500- 7540 | | F 53; 32 mln; open | | | ¾ mi east extension. |
| | | **TEXAS DISTRICT 4 (LOWER GULF-SOUTHWEST)—New Gas Field** | | | | | | | | | |
| Duval | | J. W. Gorman's F. D. Lowe 3, 1650 fr nl 1980 fr wl AB&M Sur 76, 1½ mi e ne Labbe fld, 1¼ mi s se County Line fld disc. | 4- 1-47 | 5-10-47 | 2503 | 2468- 2474 | | no gge | | | Shut in. |
| | | **TEXAS DISTRICT 4 (LOWER GULF-SOUTHWEST)—New Gas Pay** | | | | | | | | | |
| Hidalgo | Los Indios | Chicago Corp's (was Baldridge & King's) Richard King Est. 3, 467 e of wl San Salvador del Tule Gr. | 3-31-47 | 6-20-47 | 9130 | 8447- 8463 | | 1.3 mln; open | | | |
| | | **TEXAS DISTRICT 5 (EAST CENTRAL)—New Oil Pay** | | | | | | | | | |
| Grayson | Handy | The Texas Co's J. R. Handy 5, 1682 fr snl 430 fr ewl of 508½-ac lse, Sam Stweart Sur. A-1069, 682 nw of 1600-ft oil prod. | 6-11-47 | 7-14-47 | 2162 | 2102- 2162 | Strawn sd; Penn | F 307; ¼" | | Ant; geol | Involves lenticular sd; nearby deep failures emphasize smallness of prod area. |
| | | **TEXAS DISTRICT 6 (NORTHEAST)—Distillate Field Extension** | | | | | | | | | |
| Harrison | Waskom | Byrd Oil Corp's Mrs. Cleve B. Jobe 1, 467 fr sec of Sarah Reynolds Sur A-598, 1 mi sw Jonesville, ½ mi nw ext. | 5-15-47 | 7- 7-47 | 6204 | 5684- 5693 | Pettit li; L Cre | F 1500; 100 mln; open | | | This was an attempt to find Travis Peak oil prod. |
| | | **TEXAS DISTRICT 7-B (NORTH CENTRAL)—New Oil Field** | | | | | | | | | |
| Shackelford | | Hickok & Reynolds Inc's Merrick Davis 1-14, 760 fr wel 1979 fr nsl T&P Ry. 14, Blk 12, ¾ mi sw shallow prod. | 4-26-47 | 6-26-47 | 4957 | 4941- 4947 | Ellenburger dolo; Ord | F 148; ¼" | 42 | Ant; geol | Comparatively thin pay and due to be erratic in performance. |
| | | **TEXAS DISTRICT 7-B (NORTH CENTRAL)—New Oil Pay** | | | | | | | | | |
| Haskell | Humphrey-Chapman | Thos. D. Humphrey's P. M. Baldwin 2, 3181 fr snl 467 fr ewl of Thos. McMeary Sur 64, offsetting Strawn prod. | 5-20-47 | 6-19-47 | 2551 | 2541- 2551 | Canyon sd; Penn | P 32 | 40.4 | Ant; geol | Shallow zn to prod in greater portion of fld. Erratic in performance. |
| | | **TEXAS DISTRICT 7-C (WEST CENTRAL)—New Oil Fields** | | | | | | | | | |
| Crockett | Midway Lane | Sinclair Prairie Oil Co-Atlantic Ref. Co's University 1, lse 66.- e sw ne Sect. 30 Blk 46, 8½ mi ne Todd-Ellenburger fld. | 5- 4-47 | 7-31-47 | 7680 | 7530- 7575 | Ellenburger dolo; Ord | F 1232; ½" | 49 | Ant; geop | Major reserve of sweet crude. Prolific gas-dist prod fr top of Ellenburger at 7396 ft to gas-oil contact at 7512 ft; Ellenburger wtr table at 7660 ft, or slightly higher. |
| Crockett | | Stanolind O&G Co's University 1-TT, c sw nw Sect. 12, Blk. 39, 18 mi se Barnhart fld (Ellenburger). | 9-30-46 | 6-30-47 | 9000 | 8044- 8052 | Detrital li; Penn | F 63; 11/64" | 43 | Ant; geol | Comparatively thin pay, and has excessive gas-oil ratio. Commercial Ellenburger prod due elsewhere on structure. |
| | | **TEXAS DISTRICT 8 (WEST)—New Oil Field** | | | | | | | | | |
| Reeves | Verhalen | Argo Oil Corp's Mrs. Dora Roberts 1, c nw se H&GN Ry. 294, Blk 13, 21 mi nw Chancellor pl. | 6-30-45 | 7-23-47 | 14073 | 9917-10853 | Wolfcamp li; Perm | F 71; 7 wtr; 2" | 43.3 | Ant; geop | Not profitable in view of depth and wtr. Further development improbable. |
| | | **TEXAS DISTRICT 8 (WEST)—New Oil Pay** | | | | | | | | | |
| Winkler | Keystone | Richardson & Bass, Inc's J. B. Walton 44-H, 555 fr nsl 660 fr ewl PSL 1, Blk B-3. | 5- 1-47 | 7- 5-47 | 5110 | 5009- 5050 | Clear Fork li; Perm | F 433; ¼" | 39.6 | Ant; geol | Prod fr this new zn previously indicated in tests seeking pre-Permian prod. |
| | | **TEXAS DISTRICT 8 (WEST)—Oil Field Extension** | | | | | | | | | |
| Ector | TXL-Devonian | Shell Oil Co's Mrs. M. E. Cochran 1-A, 669 fr wel 1983 fr nsl T&P Ry. 34, Blk 46, T-1-N, 1¼ mi n nearest Devonian prod. | 3- 7-47 | 7- 7-47 | 8150 | 7955- 8150 | Devonian li-chert; Devo | P 39 | 39 | Ant; geol | Defines Devonian area to nw. Intermediate lens will be productive. |
| | | **TEXAS DISTRICT 9 (NORTH)—New Oil Field** | | | | | | | | | |
| Baylor | | Ashland O&R Co's L. V. Martin 1, 1320 fr wel 440 fr nsl Sect 3114, TE&L Co. Survey, 3¼ mi se Rendham fld. | 1-18-47 | 6-30-47 | 5755 | 5420- 5440 | Mississippi li; Miss | P 62; 150 wtr | 40.5 | Ant; geol | Not commercial, considering depth and initial wtr yld. First Mississippi prod in county. |
| | | **TEXAS DISTRICT 9 (NORTH)—New Oil Pays** | | | | | | | | | |
| Archer | Burns-Benson | Texmass Pet. Co. (was H. W. Snowden's) Mrs. J. H. Turbeville 1, 330 n 330 w of nwc TE&L Co. 1823, but in R. R. Rainey Sr. A-354, ⅞ mi n of Bend prod. | 11-24-46 | 7-14-47 | 5028 | 4993- 5020 | Marble Falls sdy li; Penn | P 5 | 42.8 | Ant; geol | Not profitable. |
| Montague | | J. M. Garrett-A. V. Grant & Pace Pet. Co's V. Pittman 1, 600 fr ewl 970 fr snl of 100-ac lse, or 2600 fr nsl 600 fr ewl Jas. Ferguson Sur. A-261, ⅜ mi ne depleted 1600-ft disc. pumper. | 5-14-47 | 6-22-47 | 2008 | 2003- 2008 | Strawn sd; Penn | P 28 | 41.6 | Ant; geol | Nearby failures tend to restrict prod area. |
| Young | Kendall | Warren Oil Corp's Allar-Deats 1-A, sw sw sw BS&F Ry. 3, A-43, nw edge of fld, offsetting Bend and Marble Falls prod. | 6-13-47 | 7-22-47 | 4558 | 4552- 4558 | Mississippi li; Miss | F 110; ¼" | 43 | Ant; geol | Deepest of 3 oil zns; main portion of fld not explored below Bend. Mississippi zn generally small area. |
| Young | | Warren Oil Corp's Bulah Martin 2, 330 fr nsl 1278 fr wel of M. DeWitt Sur., A-1412, 990 s by e of disc gasser same zone. 1¼ mi w of nearest oil prod. | 5-26-47 | 6-28-47 | 4231 | 4220- 4231 | Marble Falls cgl; Penn | F 460; ¼" | 43 | Ant; geol | Upper 5 ft effective pay cased off to avoid excessive gas. Substantial oil reserve; area may link with Kendall fld 1¼ mi east. |
| Young | Warren-Martin | Warren Oil Corp's Mary Henderson 1, 330 fr snl 1360 fr ewl of J. C. Cothan Sur. A-1400. | 7- 1-47 | 7-23-47 | 2774 | 2766- 2774 | Strawn sd; Penn | P 55 | 42 | Ant; geol | Involves lenticular sd that may be erratic in prod performance. |
| | | **TEXAS DISTRICT 9 (NORTH)—Oil Field Extension** | | | | | | | | | |
| Young | Burns-Benson | L. T. Burns et al's R. Campbell 1-C, 467 fr snl 1300 fr ewl Sect. 1376, TE&L Co. Sur. 1¼ mi sw ext. | 5-12-47 | 6-30-47 | 4605 | 4464- 4476 | Bend li; Penn | F 158; 11/64" | 43 | Ant; geol | Intermediate acreage will be developed. |
| | | **WEST VIRGINIA—New Gas Fields** | | | | | | | | | |
| Nicholas | | Columbian Carbon Co's W. R. Grose 960, Summerville dist | | 7- -47 | 1870 | 1629- 1854<br>1854- 1870 | Big Lime; Miss<br>Injun sd; Miss | .6 mln | | | |
| Raleigh | | Hope Natural Gas Co's H. G. Farmer 9, 126, Trap Hill dist | | 7- -47 | 2106 | 1629- 1671 | Maxton sd; Miss | 1.4 mlu; open | | | |

[1] Character of producing formations abbreviated thus: ch, chalk; dolo, dolomite; li, limestone; sd, sandstone; sh, shale; ser, serpentine; cgl, conglomerate. Ages of formations abbreviated thus: Plio, Pliocene; Mio, Miocene; Olig, Oligocene; Eoc, Eocene; U. Cre, Upper Cretaceous; L. Cre, Lower Cretaceous; Jur, Jurassic; Tri, Triassic; Perm, Permian; Penn, Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Devo, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian.

[2] Barrels of oil per day (24 hr. rate), flowing (F), pumping (P), swabbing (Sw), or bailing (B); or million cubic feet of gas daily open flow capacity; size of choke given in inches. [3] Type structure abbreviated as follows: Ant, Anticline; D, Dome; Fld, Fold or Folded; Flt, Fault or Faulted; M, Monocline; N, Nose; SD, Salt Dome; Str trp, Stratigraphic trap; Syn, Syncline; Ter, Terrace. [4] Method of discovery abbreviated as follows: cd, core drilling; dr, drilling; geol, geology; geop, geophysics; grv, gravity meter; ran dr, random drilling; seis, seismograph; sub, subsurface geology; sur, surface geology; tb, torsion balance.




1. Geologists' and geophysicists' offices. 2. Auditorium and canteen, also public entrance to main building. 3. Production and engineering offices. 4. Drilling tool storage. 5. General Warehouse. 6. Warehouse, garage and shop offices. 7. Garage. 8. Welding Shop. 9. Cleaning racks. 10. Machine shop. 11. Field crew dressing room and showers.

## NEW DESIGN SPEEDS CONSTRUCTION ON

# Oil Field Camp Buildings

THE oil field camp has grown up. No broad-visioned planning, with William J. Travers, assistant chief of Richfield's Exploitation Department, advocate of the idea.

Instead of an office building surrounded by a heterogeneous collection of corrugated iron sheds, the new camp is designed as a unit, with all buildings conforming to the design and type of the main office.

A further innovation lies in bringing together the various departments, scientists, production men and engineers, as well as the several maintenance departments.

Carefully planned and integrated into the general scheme of things are the outside facilities not a part of the buildings. These include ample, surfaced parking areas for employes; parking space for field equipment; pipe racks and flat racks; large concrete welding platforms and various testing areas. These outside developments have received equal consideration with the buildings, their facilities and equipment.

A further departure from the usual concept of a camp was incorporated in the plans by making room in the administration or office building for a small auditorium to seat about 75 people, together with a canteen for soft drinks, etc.

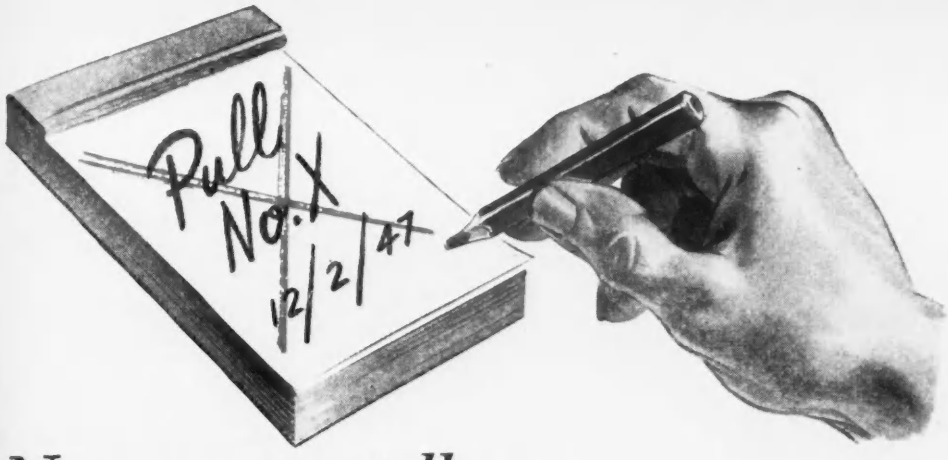
Six buildings make up the new Richfield camp, with a combined total of 43,649 square feet. This area is divided into a main office of 15,349 square feet (including a 1300-square foot basement); a general warehouse and drill tool storage building of 9000 square feet; a warehouse, garage and field office building of 1800 square feet; a welding shop of 1500 square feet; a combined machine shop, cleaning rack and dressing room for field help of 10,000 square feet; and a general garage of 6000 square feet.

The Latisteel method of construction is to be used. It calls for the use of building units, or modules, formed of vertical and horizontal members of expanded, light steel, studs, angles and channel sections on which Latisteel fabric is welded to give lateral strength and form reinforcement for the exterior concrete finish.

These units are laid flat on a smooth portable surface and concrete poured to form a "skin" or outer wall. Later, after fully set, these panels are lifted into place and anchored to bolts preset in the foundation. The panels are bolted together and the joints then filled to form a continuous wall.

Roof trusses are hoisted into place, bolted and welded. On them, Latisteel roof decking formed of U-shaped, interlocking steel planks is welded, later to be covered with any selected insulating material and composition roofing.

Construction time is cut to a minimum, with occupancy from 60 to 90 days sooner than under conventional reinforced concrete methods.




*Now we can tell you:*

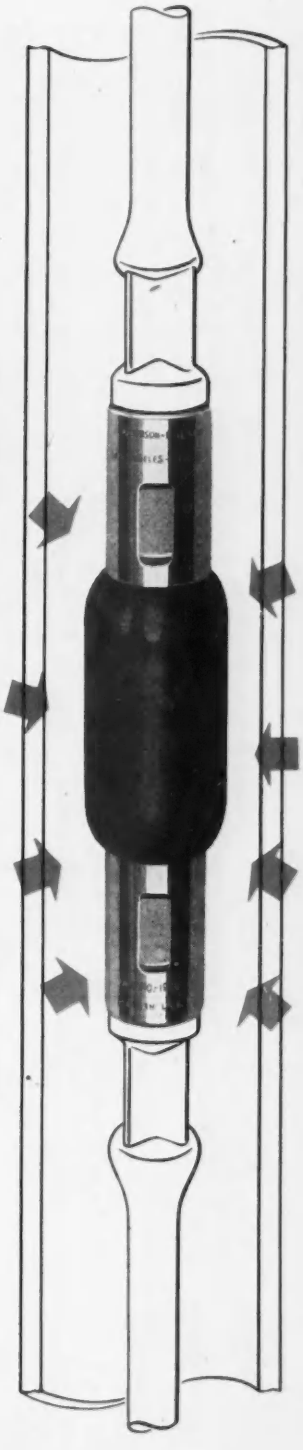
# How to stop tubing leaks due to Sucker Rod Wear!

*New Patterson Ballagh Sucker Rod Protector a Proven Success*

The high cost of pulling tubing to replace a leaky joint can now be prevented. If you have a regular well-pulling date with old No. X to replace tubing worn thin by sucker rod wear, you can mark it off your calendar. All you need do is install a new Patterson-Ballagh Sucker Rod Protector on each trouble-making rod of your string right away.

This PBX Special Rubber Protector is large enough to prevent metal-to-metal contact between sucker rods and tubing to stop friction wear. Our chemists have developed a new PBX Special Rubber formula for the Protector. They call it D-25. In field tests, D-25 has proven oil and brine resistant. We had to wait many long months for these field tests before we could tell you about D-25. Now, our field men find that D-25 Protectors hold their original diameters and *do not swell* while in the well. This means you can be sure the new D-25 PBX Sucker Rod Protector will always permit free flow of oil up the tubing.

You receive the Patterson-Ballagh D-25 Sucker Rod Protector already mounted on a standard coupling. You can order one or a string-full to suit your needs. They cost you far less than a couple of well pulling jobs; save you time, trouble and headaches. New Protector rubbers are quickly installed. Get the details from your Patterson-Ballagh man or order at your favorite Supply Store.



*Specify*

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DIVISION OF BYRON JACKSON CO.

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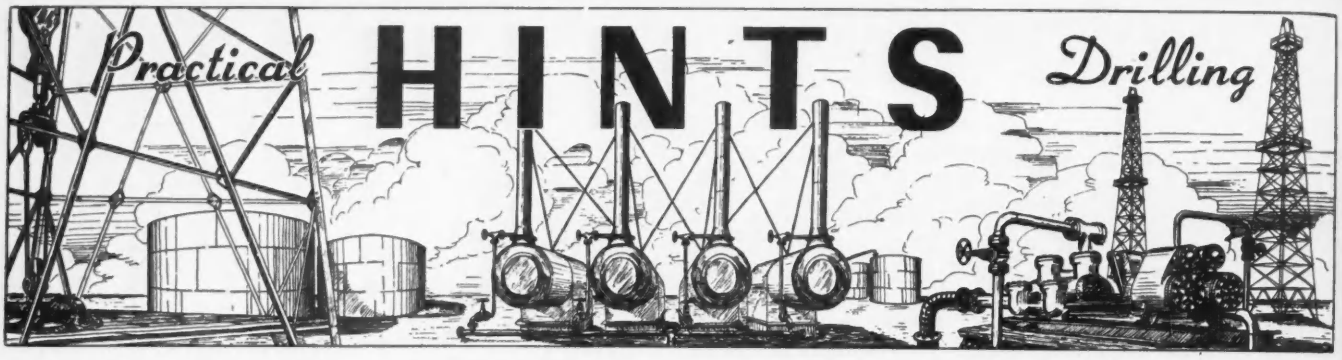
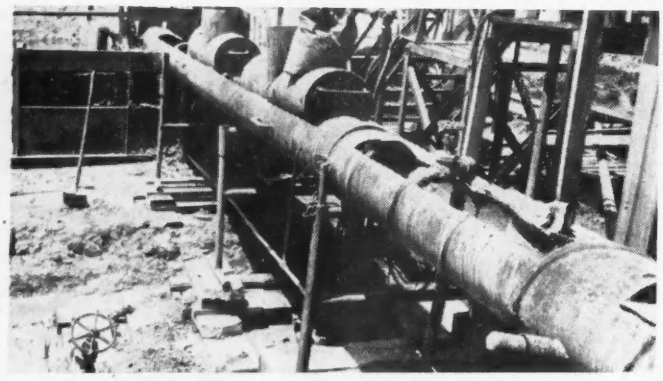



**$10.00 is paid for each illustrated acceptable contribution. Mail to The Editor, WORLD OIL, P. O. Box 2608, Houston 1, Texas**

## How To— Unitize and Support Portable Mud Ditch



Much time and expense has resulted from the adaptation of a prefabricated, unitized mud ditch,

**MUD HANDLING**

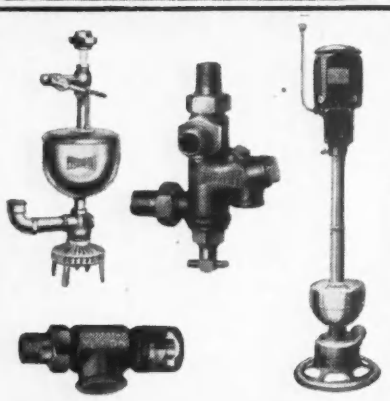
as well as provide improved means of handling drilling fluids. It also eliminates the unsightly open mud ditch, and it answers requirement in handling oil base muds.

The drilling department of one company designed the mud ditch shown, which has been used on many Gulf Coast wells. The mud ditch consists of sectionalized joints of spiral-welded 14-inch pipe, the upper side of which had been cut out at intervals to permit visual inspection of the mud, and to afford a means of adding chemicals and water to the mud stream. Each section of the ditch is provided with handles which have been welded at convenient points for ease of handling when moving and setting up the rig.

Chemical containers made of the same diameter casing in the form of a "T" rest in the cutaway sections as shown. One end of the chemical feeder is equipped with a nipple and valve to adjust the amount of chemical desired added to the mud. These containers have handles welded at each end so that two men can move them. Chemicals are fed into the container through the vertical section.

The ditch rests on a framework of piping which enterlocks to provide ample bracing. These sections, made from two-inch pipe, can be easily broken down into their integral parts for shipment.

PENBERTHY
QUALITY
PRODUCTS



Penberthy injectors—ejectors—automatic electric and water (or steam) operated sump pumps are all widely used throughout the oil industry because they have always been dependable under the most severe service conditions.
All are of rugged construction and made by an organization with 59 years experience in the manufacture of highest quality products.

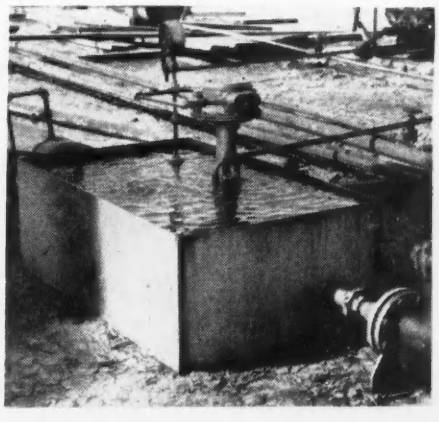
PENBERTHY INJECTOR CO.
DETROIT 2, MICH. Canadian Plant WINDSOR, ONTARIO

## How To— Prevent Gas Line Regulators from Freezing

To eliminate freezing up of gas lines and regulator fittings at the point where fuel gas is taken off of a high pressure lease gas line, one company has adopted the practice of using a rectangular tank

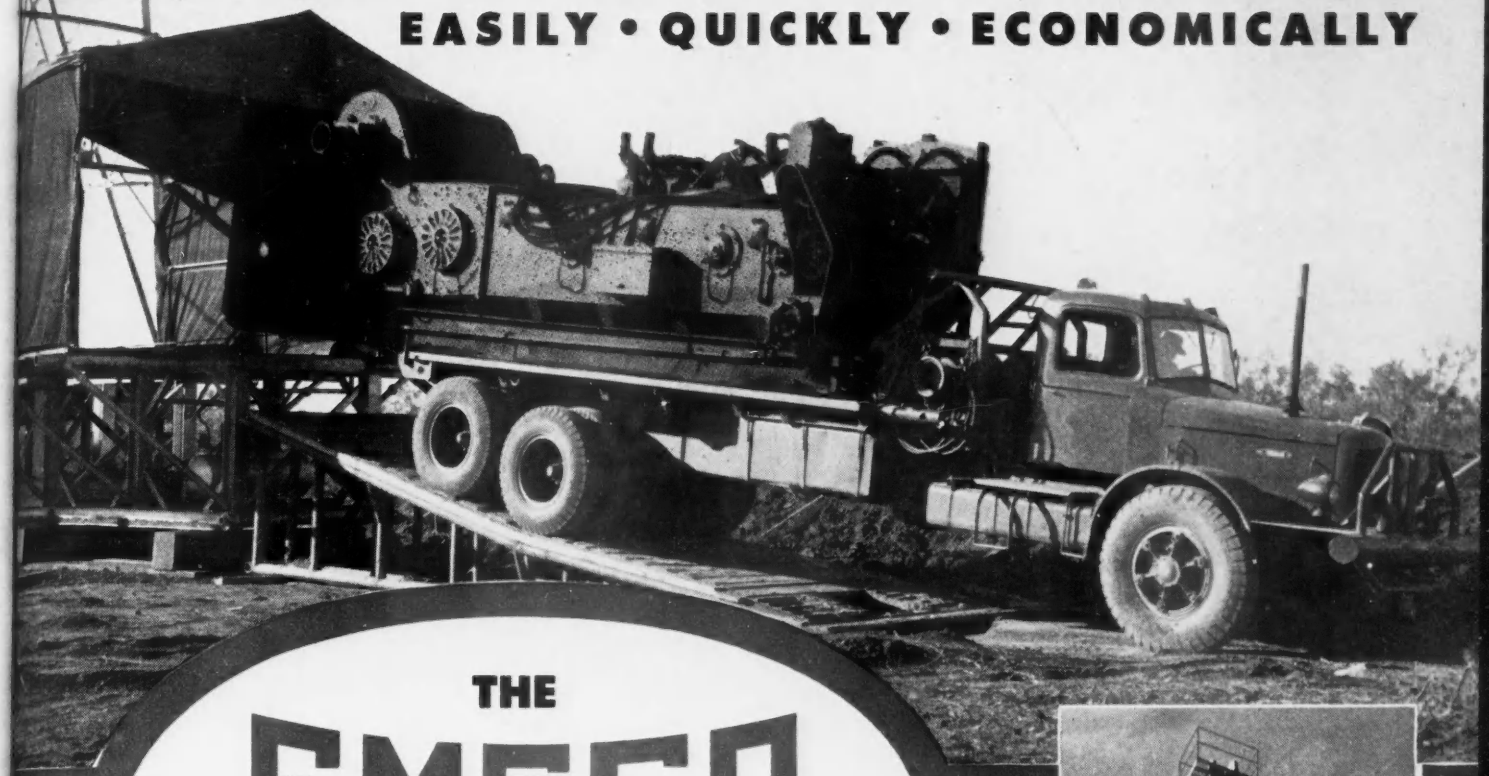
**FUEL SUPPLY**

in which are permanently mounted all such fittings, the tank being filled with water when it is set up at each location. As shown, the gas lines are run through the tank from one end to the other and welded in place to form a water tight installation. Water from boiler feed system or any auxilliary source in the drilling rig installation is used to keep the tank filled, with a small overflow on the other side taking excess on out to the sump. Hauling of the assembly is simplified, since all regulator and pipe fittings are carried as a unit with the tank, it being necessary only to connect up unions when installed at a new location.



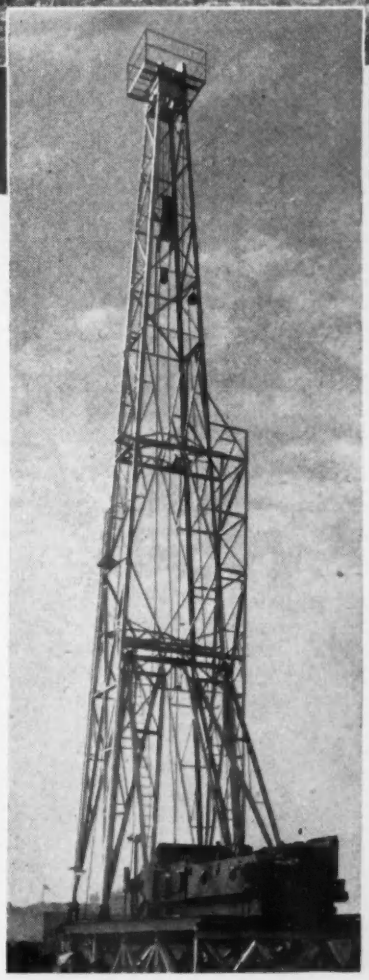
# *You Can Take it With You!*

**EASILY • QUICKLY • ECONOMICALLY**



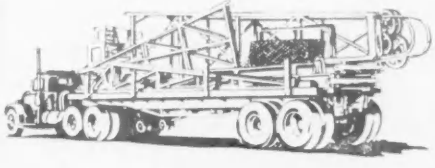
## THE EMSCO
REG. U.S. PAT. OFF.

## GA-500 DRILLING RIG



▲ Recognized throughout the oil country for its rugged characteristics yet designed with the streamlined compactness necessary for easier, quicker and more economical portability.

▲ This "easy to move" feature of the Emsco GA-500 is but one of several that have established it as outstanding among drilling rigs.



### ... *And* THE EMSCO PORTABLE MAST

offers maximum mobility of the entire rig. Embodied are such features as the patented bulage which allows racking of the drill pipe inside the mast ... and dual pivot, a unique design which does away with necessity for snub line in raising mast to working position.

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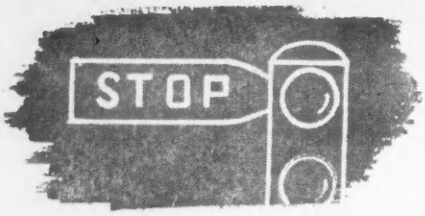
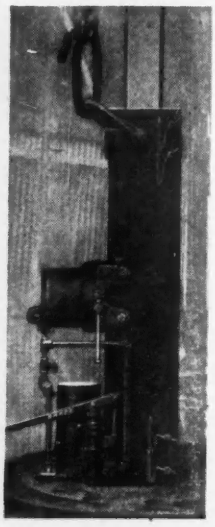
Representatives: ARGENTINA • BOLIVIA • BRAZIL • CHILE • COLOMBIA • ENGLAND • JAVA • MEXICO • PERU • TRINIDAD • VENEZUELA

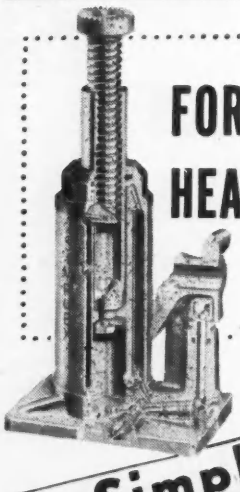


**Don't haul Kellys, Drill Pipe, and Drill Collars to the Shop for taking out kinks and bends. . . Straighten them easily and quickly while they hang vertical in the derrick by using a . . .**

**BAKER *Portable* KELLY STRAIGHTENER**

**ASK THE *BAKER* MAN**



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**Meet all needs for faster, safer lifting of heavy loads. Each Simplex Hydraulic Jack is factory tested for 50% overload. Can be used in horizontal or vertical position. Provide maximum lift at minimum height. Eight sizes in capacities from 3 to 100 tons; immediate delivery from distributors' stocks on most models. Write for Bulletin 44J.**

**TEMPLETON KENLY & CO.**
**1032 S. Central Avenue**
**Chicago 44, Illinois**



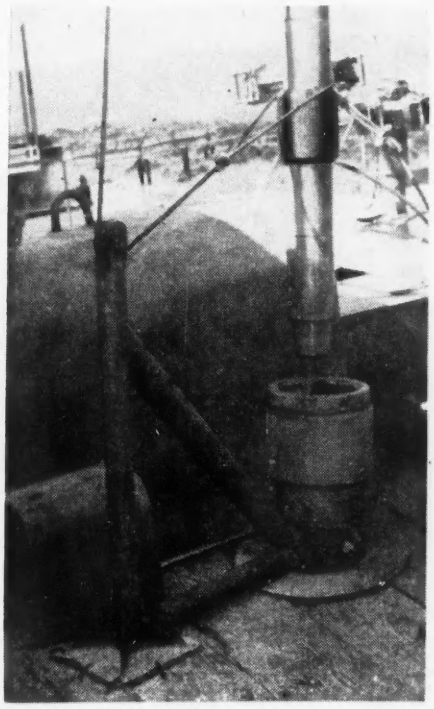

*How To—*

## Simplify Stabbing Kelly with Rat Hole Device

Stabbing the kelly in the rat hole before making a round trip can be a time-consuming and back-breaking task if the rig is not properly equipped to handle the job. Two men are usually required to push the heavy kelly joint over the rat hole, and normally two or three tries are necessary before the driller and crew synchronize their efforts in lowering the kelly exactly at the moment the men push it over the rat hole opening.

**RAT HOLE DEVICES**

To alleviate this situation and save much time and sweat, one tool pusher had the rig welder fabricate the snubbing post illustrated. Made from 3-inch pipe, the snubber is anchored at two points: to the rat hole guide and to the floor. Equal lengths of three-inch pipe are welded at right angles and braced with a 45-degree section. At the right-angle juncture, a flat plate is welded and braced to form the floor plate through which nails or bolts may be inserted to hold the snubber securely to the floor. A saddle which spans half the 12-inch rat hole guide is welded to the other end of the snubber. A half-inch bolt bent to fit around the rat hole guide secures the snubber to the guide. The top of the upright 3-inch section is split and a pulley welded in place, as shown.



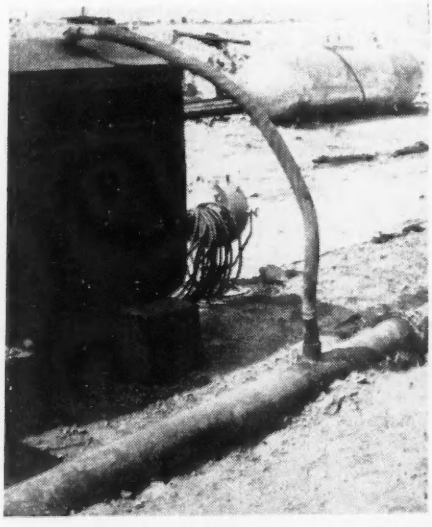
With such a device, the cat line, or any other line can be used to snub the kelly over the rat hole. Full vision is provided the driller who can easily judge the exact moment the kelly is over the rat hole and can lower the kelly in place. One man on the cathead is all that is required to work with the driller for this operation.

*How To—*

## Reduce Engine Exhaust Fire Hazard

Danger from fire or explosions caused by escaping of high pressure gas or distillate from newly completed wells or clean-out jobs, is held to a minimum by one company by taking extra precautions in the handling of engine exhausts. Rig engines exhaust into a single line which conducts the hot gases out to the edge of the location, well away from the immediate area. Auxilliary engines as well, such as the small light plant shown, are equipped with a flexible hose which is connected between the engine stack and a coupling welded into the main exhaust line. Where possible, such auxilliary equipment is set up fairly near the line to facilitate such connections. Rigging up and tearing out of such power equipment is affected only slightly by this type of hook-up, since the flexible connections are easily installed or broken down.

**SAFE PRACTICES**



# NEW EQUIPMENT LITERATURE

FOR ADDITIONAL INFORMATION, USE MAILING CARD INSERTED OPPOSITE THIS PAGE

## 1—Pressure Gauge

A pressure gauge constructed for handling corrosive substances features a lathe turned beryllium copper bourdon tube, with beryllium copper locktite cones screwed at the tip and socket. The

tip and socket are made from brass bar stock. It has a special bronzed bushed movement with bronze pinion and arbor and can be furnished in several case styles and dial sizes. The gauge is standard equipped with the Marsh "Recalibrator" to correct the gauge in case it is accidentally knocked out of adjustment.

Known as the type 105 Mastergauge, this unit is recommended for alcohol (ethyl, methyl, propyl), sodium acid sulphate, sodium chloride, oxalic acid (cold), carbon tetrachloride, paper mill sulphite solutions, boric acid, sulphuric acid (cold), alum solutions and hdyrogen sulphide.

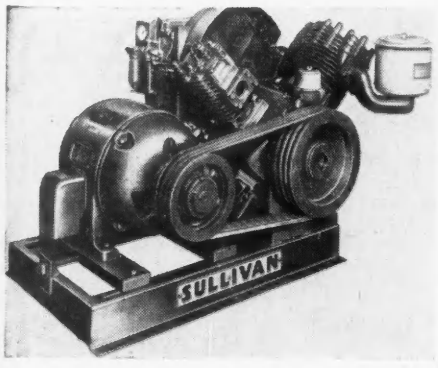
Jas. P. Marsh Corporation, 2073 Southport Avenue, Chicago 14.

*(Check item 1 on postcard for more information.)*

## 2—Air Compressor

Two-stage, air-cooled stationary air compressors are available in nine sizes with power requirements ranging from 15 to 100 horsepower and piston displacements from 81 to 590 cubic feet per minute at 100 pounds discharge pressure per square inch, based on 60-cycle motor speeds.

Because of their compact construction and smooth, vibration-free operation, Unitairs require only a small foundation. The costs of installing water-piping and of supplying water for cooling are eliminated as all Unitairs are completely air-cooled. The three-standard electric drives include built-in motor, direct-connected motor and V-belt drive. They may also be equipped for use with gasoline or diesel engines.




Some of the outstanding features of these compressors include force-feed lubrication through rifle-drilled oil passages by means of a positive, gear-driven pump; "cascade" oil cooling to reduce oil consumption and oil sludging; low-lift, large port-area, direct concentric valves for high efficiency; low piston speeds for long life; oversize ball-type main bearings for low maintenance; four piston rings per piston mounted above the pin for oil economy and for long-lasting, air compression efficiency.

Sullivan Division, Joy Manufacturing Company, Oliver Building, Pittsburgh 22.

*(Check item 2 on postcard for more information.)*

## 3—Portable Gas Analyzer

The Portable Core Gas Analyzer is designed to provide a quick, simple, and accurate core analysis in the field. Housed in a compact, lightweight case, the instrument utilizes a special extraction chamber for cutting and removing a sample from the core to be analyzed. Two such extraction chambers are furnished, one for small side wall cores and one for conventional cores.

When the core sample is obtained from the core and placed in the extraction chamber even a minute quantity of gas present is measured and immediately indicated. Though the amount of gas may be too small to burn openly, if there is gas present at all, it will be in sufficient quantity to create a thermal combustion effect across the sensitive platinum element which is used as a catalyst in completing an electrical bridge circuit. Readings are taken direct from the gas volume meter of the unit.

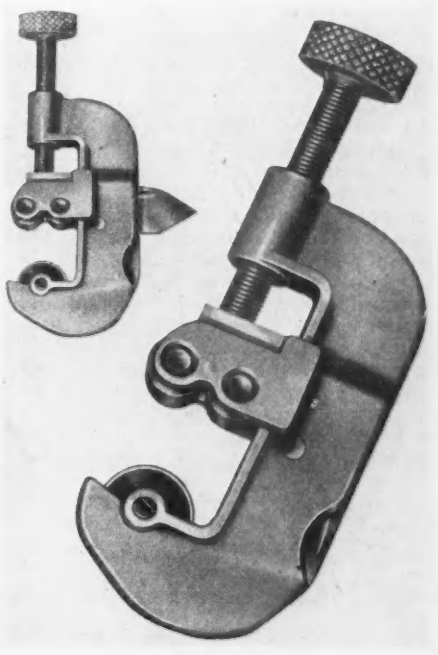
Special skills are not required to operate the gas analyzer. Operators do not use complicated computations or formulae since readings are taken directly from the self-contained gas volume meter. The instrument is available on a monthly or annual rental basis in domestic fields, and may be purchased outright for export.

Petroleum Instrument Company, 4601 Montrose Boulevard, Houston.

*(Check item 3 on postcard for more information.)*

## 4—Tube Cutter

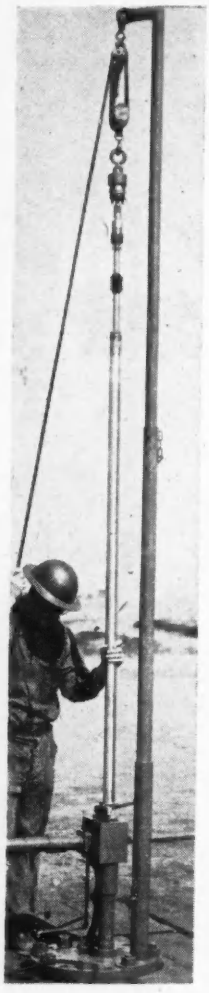
A new, lightweight tube cutter for relatively small diameter tubing work incorporates a spring-loaded reamer blade which folds into the cutter body like a jack knife. Body and vise of the tube cutter are of die-cast zinc alloy on which is mounted the tool steel roller cutter. Case hardened rollers assure accurate alignment of the cut.



C & C Die Casting Company, Inc., Whitman, Mass.

*(Check item 4 on postcard for more information.)*

## 5—Hydraulic Pump



A hydraulic pump that is said to eliminate pump pulling and reduce pumping operating costs 25 percent, can be circulated to the surface and reseated by the turn of a valve at the wellhead. It is called a "free pump," to differentiate it from fixed type pumps, which are lowered in the well at the end of tubing or rods.

Power oil directed down the power tubing, in which the pump seats, actuates the double-acting reciprocating engine, which in turn actuates the pump in the pump end. A packer nose assembly, equipped with cup and wafer type rubber packers, to provide a lifting area to raise and lower the pump in the hole hydraulically, marks the major difference between the conventional Kobe pump and the free pump.

The pump is made in two sizes, two and 2½-inch. It operates in three different systems: Parallel, consisting of a string of two or 2½-in EU power tubing and one or 1¼-inch NU production tubing; concentric, consisting of power tubing set inside production tubing; casing type, consisting of power tubing anchored in a bottomhole packer inside the casing.

To surface the free pump, power oil is directed down the production tubing and underneath the pump and up the power tubing. To seat it, the pressure is directed down the power tubing.

A four-way valve, installed at the wellhead, controls the surfacing, seating and shut-off and bleeding operations. Turned to "pump out," the valve reverses the power oil flow down the production tubing and up the power tubing. Turned to "shutoff and bleed," after the pump surfaces, the valve bleeds the pressure off both the power and production tubings. Turned to "pump in," the valve directs the flow of power oil down the power tubing to seat and operate the pump.

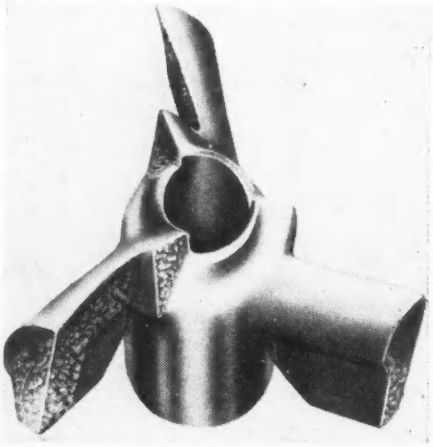
Kobe, Inc., P. O. Box 190, Huntington Park, Calif.

*(Check item 5 on postcard for more information.)*

## 6—Wire Line Core Barrel

An improved design wire line core barrel features a bit head with replaceable blades and core cutter that can be replaced in the field. Core catchers as well as other parts throughout the wire line core barrel have been improved greatly to provide positive core results.

The core cutter head is a single unit with forged alloy steel heat-treated blades.



After the cutter assembly has been positioned in the bit head, the bit is ready for welding. The finished bit is full gauge with hard metal on all cutting surfaces with the gauge and cutting edges factory ground, eliminating the necessity of grinding in the field.

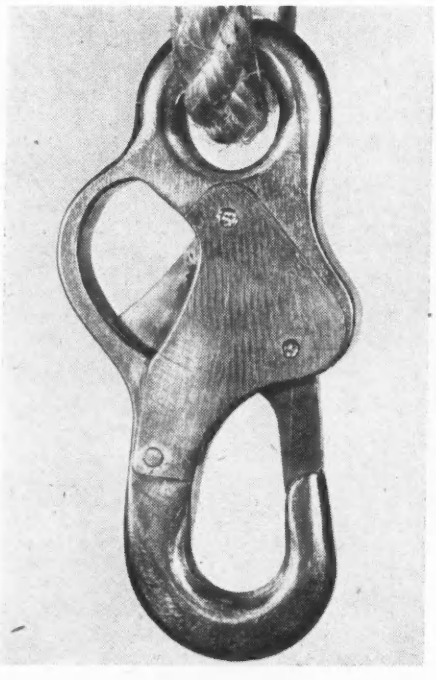
This new soft formation coring bit head brings basically the same features to the field that have been so widely accepted in the export model welded-in blade drilling bit.

Hunt Tool Company, 1945 St. Bernard Street, Houston 1.

*(Check item 6 on postcard for more information.)*

## 7—Safety Hook

A self-locking hook has a fulcrumed latch finger that closes the opening into the hook and is retained in this closed position, so that it cannot be accidentally opened. The latching finger also has an effective inter-engagement with the free end of the hook which enables it to effectively resist laterally impressed strains or pressures.



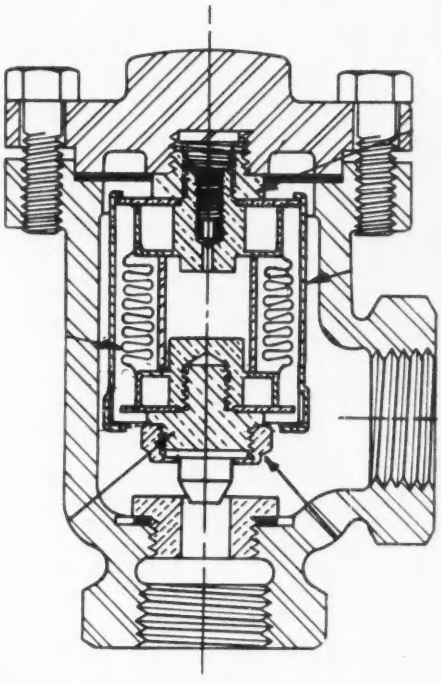
The 5½-inch hook is made from a steel forging, plated and weighing approximately 11 ounces with load capacity of approximately 900 pounds. Hooks of larger tonnage are being engineered and designed to meet field requirements.

Regan Forge & Engineering Company, P. O. Box 150, San Pedro, Calif.

*(Check item 7 on postcard for more information.)*

## 8—Thermostatic Traps

Designed to withstand the shock of external explosions, to handle corrosive condensate, and to operate with pressures up to 300 pounds per square inch or with superheat steam is the new cast-steel thermostatic steam trap. The cast-steel body and cap provide the strength necessary to withstand the shocks of external explosion. The stainless steel thermostatic element safely handles corrosive condensate, and permits these traps to be used for superheat steam. Another of this series has a bronze thermostatic element for maximum operating pressures up to 225 psi saturated steam.

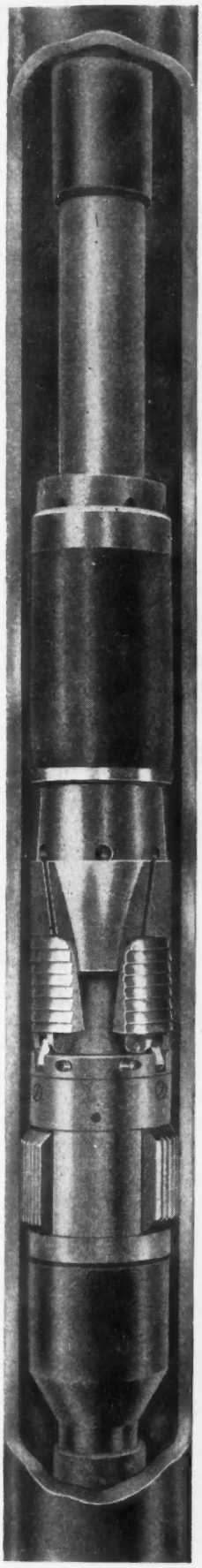


The thermostatic element is a patented helical bellows which permits a much larger orifice than can be provided on float or bucket traps. The greater air venting capacity provides rapid heating from a cold start. There are no seats to change for pressure changes or fluctuations because the differential between the pressure created in the thermostatic bellows and the steam pressure remains practically constant. The flexible bellows is the only working part of the trap. When discharged into the atmosphere, no protection is required against freezing.

Sarco Company, Inc., 475 Fifth Avenue, New York 17.

*(Check item 8 on postcard for more information.)*

# The WILSON

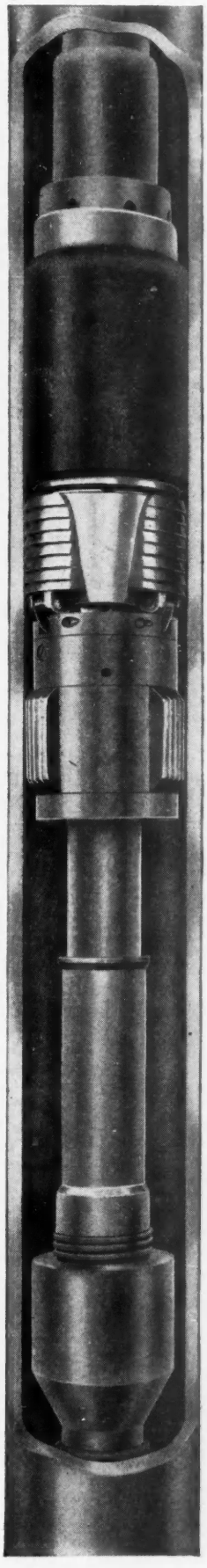


(GOING IN HOLE)

•

Patent Applied for

(SET)



"Positive Seal"

## HOOK WALL PACKER

•

## Fool Proof in Setting - at Any Depth

•

—And it sets with less weight.

In the Wilson "Positive Seal" Hook Wall Packer, three friction blocks, hard faced with stellite are used in place of friction wiper springs. These friction blocks are held against the well of casing by three rugged coil springs—and insure correct setting regardless of depth.

To set the Wilson "Positive Seal" Packer, tubing must be turned 2½ revolutions—a feature that eliminates accidental setting—and resultant damage to packer.

The non-vulcanizing pack-off element is expanded by conical wedge—and does not depend on excessive tubing weight on packer to secure pack-off. The split pack-off gives a "lip-seal" which means that the higher the pressure from below—the tighter the seal.

Slips and slip reins are compact. Slips are set in "dovetail" on mandrel and cannot be lost in the hole.

In any specified pipe size One packing element fits all weights of pipes. This feature means small inventories, also, more important, Packer can be set in "mixed" strings of casing.

It is compact—overall length only 47 inches.

It is lighter in weight; yet exceptionally strong.

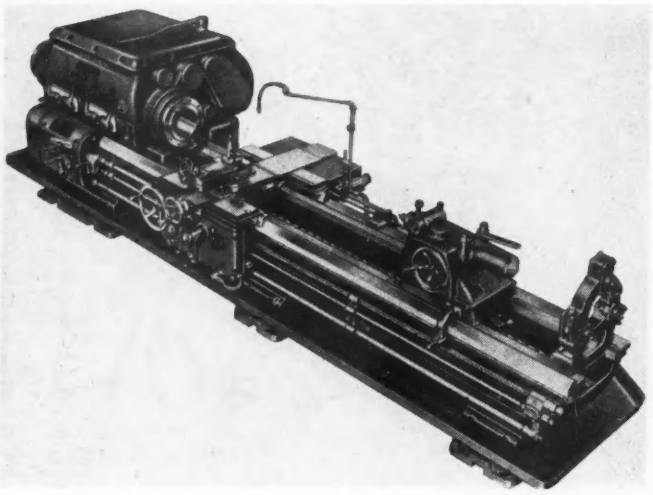
*Contact your nearest Wilson Supply Store or write*

# WILSON SUPPLY COMPANY

**1412 MAURY ST., HOUSTON, TEXAS**

SALES OFFICES: Tulsa, Oklahoma; Dallas and San Antonio, Texas.
LOS ANGELES: Western Pressure Control, 5700 Santa Fe Avenue.
TRINIDAD, B.W.I.: Neal Massey Eng. Corp.
BRANCH STORES: TEXAS: Kilgore, Beaumont, Barbers Hill, Bay City, Monahans, Alice, Victoria, Corpus Christi, Columbus. LOUISIANA—Lake Charles, New Iberia, Harvey, Shreveport. ARKANSAS—Magnolia. MISSISSIPPI—Natchez.

## 9—Hollow Spindle Lathe



The hollow spindle "Oil Country" lathe was designed to meet special requirements of the oil industry and to work on such long members as the kelly and other tool joint jobs.

The machine is manufactured in two sizes, a 20-inch lathe with 24 speeds and a 25-inch lathe with 16 speeds. Beds are of massive rigidity, giving full support to the rest of the lathe assembly and maintaining alignment under any strain or stress of heavy-duty cutting.

Lead screws are turned and ground while preloaded and adjustable thrust bearings are provided at each end of the screw. The feed rod is used for all work except threading. Headstock case is a one-piece oil-tight unit in which the mounting of the hollow spindle is handled by two sets of Timken precision bearings before threading bearings. The forged alloy steel hollow spindle is ground to close tolerances and all gears in the spindle driving train are of alloy steel, carburized, hardened and profile ground. Four levers control both the 24 and 16-spindle speeds.

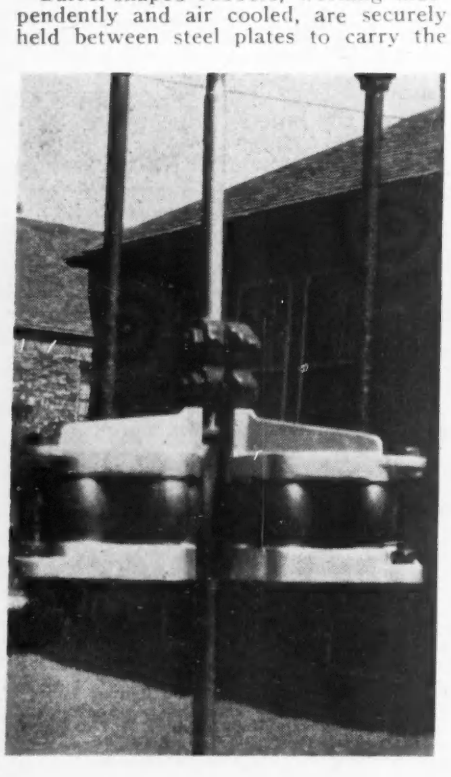
Alexson Mfg. Company, P. O. Box 98, Vernon Station, Los Angeles, Calif.

*(Check item 9 on postcard for more information.)*

## 10—Shock Absorbers

Two types of well shock absorbers, designed to minimize wear and shock on the pumping system, are available in either the polish rod or pitman beam types. Low initial cost, with minimum operating and upkeep expenses are said to be features of the equipment.

Barrel-shaped rubbers, working independently and air cooled, are securely held between steel plates to carry the load of the well. Sudden shocks which ordinarily would be transmitted to the rods, band wheel shafts, belts, engines, etc., are absorbed in these rubber cushions. With different durometer tested rubber cylinders, the manufacturers claim these absorbers will handle any weight subjected to the polish rods for any motion or stroke.



Advantages claimed include ease of installation, saving up to 25 percent on rod jobs, prolonged life of new and old rods and pumping equipment, and reduced peak loads. The polish rod type is installed on the rod hanger, and the pitman beam type is a combination shock absorber and pitman stirrup bearing.

Tulsa Shock Absorber, Inc., 621 National Mutual Building, Tulsa 3.

*(Check item 10 on postcard for more information.)*

## Literature

### 11—Drilling Rigs

The new 20-page bulletin No. 345 describing the Ideal Consolidated Rig Type 125 designed for fast and economical drilling of oil wells to depths of of 15,000 feet, has 17 photographs showing the rig and its features. Included also are a detailed description of features of the rig, complete operating, lubrication and draw-works specifications, a shaft speed diagram and two-dimensional drawings showing the use of both the three-engine power group and the four-engine power group. The Ideal Type 125 rig has 6 hoisting speeds in addition to 2 independent empty block speeds, 6 rotary table speeds and 2 reverse speeds.

The National Supply Company, Box 899A, Toledo 1, Ohio.

*(Check item 11 on postcard for more information.)*

### 12—Gas Welding Rods

The current issue of the *Eutectic Welder* contains information on latest developments in gas welding. It is devoted to descriptions and explanations of the new ready-flux-coated gas welding rods. It is claimed that flux-coated rods in gas welding are a major advancement in the gas-welding field. The magazine describes the physical properties of the new rods as well as lists the advantages in using this new type rod.

Eutectic Welding Alloys Corporation, 40 Worth Street, New York 13.

*(Check item 12 on postcard for more information.)*

### 13—Elflex Booklet

Information concerning the Elflex Company of Houston is contained in a pamphlet designed for the use of the physicist, geologist, geophysicist and oil operator. History of the organization is briefly outlined; a section is devoted to answering technical questions about Elflex, Eltex and Eltran; and statistical and operational phases are presented.

The Elflex Company, Esperson Building, Houston 2.

*(Check item 13 on postcard for more information.)*

### 14—Rigging Catalog

A newly-revised catalog data book number 140 contains much engineering information in addition to presenting detailed working characteristics of wire rope and fittings to remove guesswork in selecting the proper fitting. The catalog contains tables and charts which make it a valuable reference book for engineers, architects, riggers and safety directors.

The Thomas Laughlin Company, Portland 6, Maine.

*(Check item 14 on postcard for more information.)*

### 15—Emulsion Treaters

A 34-page illustrated catalog section on emulsion treaters presents descriptions of operation, specifications, and complete information covering the B S & B type "F" stage treater; the "FCW" treater designed for cold climates; the gas-free treater; and the "KA" and "KP" systems. In addition to photographs of the treaters and "where to use it" information, cutaway drawings in color show the flow of oil and gas through the treaters.

Black, Sivalls & Bryson, Inc., 720 Delaware, Kansas City 6.

*(Check item 15 on postcard for more information.)*

### 16—Bolts and Nuts

A catalog which offers a convenient means of selecting brass, bronze, silicon bronze, stainless steel and monel metal bolts, nuts, washers and screws provides specific information and price listings on a wide variety of types and sizes. Pawtucket Manufacturing Company, 349 Pine Street, Pawtucket, R. I.

*(Check item 16 on postcard for more information.)*

# Daily Crude Production Reaches New All-Time High of 5,159,000 Barrels

Daily crude production was boosted to a new all-time high in the week of August 16, and operation of the Nation's refineries continued at very high levels. Production of the principal refined products outdistanced demands and allowed satisfactory additions to their stocks.

A new record was set when daily crude production from U. S. fields averaged 5,159,000 barrels, an increase of 54,000 barrels per day over the previous week, the API reported. That was 316,000 barrels a day or 6.5 percent more than produced in the like week of last year. The previous all-time peak had been 5,115,000 barrels daily, the output in the week ended June 21.

Daily crude runs to stills amounted to 5,202,000 barrels in the week to show an increase of 18,000 barrels a day from the preceding week's runs. These charges to refinery stills were 311,000 barrels a day or 6.4 percent greater than they had been a year before and represented 92.1 percent of the country's total refining capacity.

Stocks of refinable crude stood at 277,779,000 barrels on August 9, 3,690,000 barrels less than they had been a week before, the Bureau of Mines' latest report showed. However, compared with stocks a year ago they were 3,681,000 barrels or 1.6 percent higher. This latest stocks figure does not include 5,189,000 barrels of non-gasoline bearing material in California.

The week's output of gasoline, including natural blended, amounted to 16,056,000 barrels, a drop of 107,000 barrels from the last week, but 416,000 barrels or 2.7 percent more than production in last year's comparable period. Despite this cutback in production, gasoline stocks climbed for the first time since the outset of the motoring season. On August 16, finished and unfinished gasoline stocks totaled 84,983,000 barrels, an increase of 85,000 barrels during the seven days, but still they totaled 2,032,000 barrels or 2.3 percent less than a year before.

Production of distillate fuel oils was upped 129,000 barrels from the last week and totaled 6,061,000 barrels for the week ended August 16. That amount was 946,000 barrels or 18.5 percent over output a year ago. Stocks of these light oils were boosted 2,140,000 barrels and ended at 51,685,000 barrels, or 1,842,000 barrels, 3.7 percent, over last year's total.

## *Prices For Refinery Products Remain Generally Unchanged*

Prices for refinery products were generally unchanged last week as all areas reported continued high demands and scarce or closely held supplies. There were, however, reports of slightly increased quotations from Pennsylvania and along the Atlantic Coast.

Some light products' prices ranged higher in the lower field of western Pennsylvania when a refiner reported increasing postings of .25 cent to .5 cent. His new price for regular-grade gasoline and Stoddard solvent was 10 cents and 9.75 cents for 47 water white kerosine, all up .25 cent. His quotations for Nos. 1 and 2 fuel oils were boosted to 9.5 cents, a rise of .5 cent. New ranges of quotations were 9.25 to 10 cents for regular grade, 9.5 to 10 cents for Stoddard solvent, and 9.5 to 9.75 for kerosene.

Foreign buyers were reported still willing to pay higher than posted prices for wax and lubes. One Pennsylvania refiner reported he was currently making a few spot sales of scale wax for export at 9.5 cents and several others reported turning down 45-cent export offers for bright lube stocks because of inability to handle regular accounts.

Kerosine and No. 2 fuel oil prices ranged higher at Charleston last week when one supplier advanced his postings to 9 cents for kerosine and 8.1 cents for No. 2. Increased cost of material at the Gulf Coast was given as the reason for the hike. In Baltimore, a supplier reported his quotation for kerosine was increased .5 cent to 8.5 cents and up .4 cent to 7.6 cents for No. 2 fuel. This supplier also announced he was no longer posting split New York and New Jersey prices for kerosine and No. 2. Others, however, are still asking 6.7 cents for barge lots of No. 2 to New Jersey and 7.1 cents for New York.

No open spot sales or changes in prices were reported by Midwest refiners. Supplies the most part continued to be closely held, but reports indicated that material could be obtained "at a price."

## Trends of Operations and Changes in Stocks

**Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.**
**(All figures in thousands of barrels—add 000)**

**HIGHS AND LOWS OF RECENT YEARS**

| ITEM | Crude Oil Prod. Barrels Daily | Crude Oil Prod. Week Ended | Runs to Stills Barrels Daily | Runs to Stills Week Ended | Crude Stocks Barrels | Crude Stocks Week Ended | Gasoline Stocks Barrels | Gasoline Stocks Week Ended | Gasoil and Distillate Stocks Barrels | Gasoil and Distillate Stocks Week Ended | Residual Fuel Oil Stocks Barrels | Residual Fuel Oil Stocks Week Ended |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High: | | | | | | | | | | | | |
| 1942 | 4,337 | 2- 7 | 3,961 | 1- 3 | 263,208 | 3-28 | [1]109,281 | 3-14 | 47,861 | 11-14 | 95,857 | 1- 3 |
| 1945 | 4,944 | 7-21 | 5,140 | 8-18 | 227,554 | 10-13 | 99,012 | 3-24 | 45,341 | 11-17 | 56,074 | 1- 6 |
| 1946 | 4,961 | 6-15 | 4,968 | 12-28 | 229,430 | 3- 2 | 105,233 | 2-16 | [1]67,286 | 11- 9 | 61,036 | 11- 2 |
| 1947 | [1]5,159 | 8-16 | [1]5,271 | 8- 2 | 239,370 | 5-31 | 107,576 | 3-29 | 58,034 | 1- 4 | 54,000 | 8-16 |
| Lows: | | | | | | | | | | | | |
| 1945 | 3,621 | 10- 6 | 3,409 | 10- 6 | [2]211,813 | 8-35 | 70,791 | 10-13 | 26,483 | 3-17 | 38,548 | 5-26 |
| 1946 | 4,403 | 3- 9 | 4,498 | 1-12 | 218,193 | 1- 5 | 85,324 | 9-28 | 25,131 | 3- 9 | 37,289 | 4- 6 |
| 1947 | 4,531 | 4-11 | 4,667 | 4-12 | 220,313 | 2- 8 | 84,898 | 8- 9 | 31,470 | 4-19 | 42,668 | 4-26 |

**TRENDS OF 1946 AND 1947**

| Trends in Week Ended | Crude Oil Production Daily | Crude Oil Runs to Stills Daily | Crude Oil Stocks Week End | Gasoline Production Weekly | Gasoline Stocks Week End | Gasoil and Distillate Production Weekly | Gasoil and Distillate Stocks Week End | Residual Fuel Production Weekly | Residual Fuel Stocks Week End |
|---|---|---|---|---|---|---|---|---|---|
| 1946 | | | | | | | | | |
| January 5 | 4,548 | 4,651 | 218,193 | 14,488 | 98,494 | 5,923 | 35,199 | 8,867 | 42,371 |
| January 26 | 4,626 | 4,553 | 220,544 | 13,622 | 101,737 | 5,720 | 29,498 | 8,411 | 39,722 |
| February 23 | 4,714 | 4,595 | 226,699 | 13,175 | 104,709 | 5,728 | 25,398 | 7,913 | 39,290 |
| March 30 | 4,425 | 4,684 | 224,994 | 13,896 | 104,715 | 5,337 | 28,240 | 8,738 | 37,746 |
| April 27 | 4,672 | 4,685 | 224,443 | 14,228 | 99,631 | 5,568 | 30,466 | 9,204 | 39,404 |
| May 25 | 4,759 | 4,857 | 222,214 | 14,312 | 95,769 | 5,463 | 32,973 | 8,908 | 43,368 |
| June 29 | 4,957 | 4,854 | 223,883 | 14,500 | 92,333 | 5,325 | 37,762 | 8,828 | 46,477 |
| July 27 | 4,926 | 4,896 | 223,756 | 14,535 | 88,626 | 5,817 | 44,316 | 8,217 | 49,517 |
| August 31 | 4,833 | 4,911 | 227,132 | 15,014 | 87,217 | 5,630 | 53,134 | 8,539 | 53,173 |
| September 28 | 4,778 | 4,829 | 223,043 | 14,675 | 85,324 | 5,632 | 59,827 | 8,172 | 57,657 |
| October 26 | 4,730 | 4,758 | 221,184 | 14,863 | 86,423 | 5,710 | 65,499 | 7,728 | 60,872 |
| November 30 | 4,795 | 4,707 | 227,693 | 15,145 | 88,371 | 5,258 | 66,062 | 7,672 | 58,647 |
| December 28 | 4,713 | 4,968 | 225,995 | 15,604 | 93,126 | 5,931 | 58,941 | 8,181 | 53,427 |
| 1947: | | | | | | | | | |
| January 4 | 4,649 | 4,917 | 223,291 | 15,281 | 94,882 | 5,857 | 58,034 | 8,375 | 53,285 |
| January 25 | 4,672 | 4,820 | 221,655 | 14,624 | 99,801 | 5,630 | 50,357 | 8,224 | 48,558 |
| February 22 | 4,786 | 4,860 | 224,580 | 14,668 | 103,904 | 5,929 | 40,739 | 8,542 | 44,919 |
| March 29 | 4,865 | 4,843 | 227,529 | 14,396 | 107,576 | 5,969 | 32,737 | 8,668 | 43,364 |
| April 26 | 4,930 | 4,725 | 235,383 | 14,213 | 103,860 | 5,435 | 32,286 | 8,186 | 42,668 |
| May 31 | 5,024 | 5,000 | 239,370 | 14,709 | 95,876 | 5,732 | 36,032 | 8,910 | 45,224 |
| June 28 | 5,109 | 5,093 | 236,221 | 16,070 | 91,806 | 5,006 | 41,721 | 8,298 | 48,490 |
| July 26 | 5,084 | 5,162 | 231,357 | 16,142 | 85,812 | 5,708 | 47,097 | 8,738 | 52,497 |
| August 2 | 5,088 | [1]5,271 | 231,469 | 16,517 | 85,645 | 6,004 | 48,574 | 8,582 | 53,107 |
| August 9 | 5,105 | 5,184 | 227,779 | 16,163 | 84,898 | 5,932 | 49,545 | 8,757 | 53,531 |
| August 16, 1947 | [1]5,159 | 5,202 | ..... | 16,056 | 84,983 | 6,061 | 51,685 | 8,831 | 54,000 |
| August 17, 1946 | 4,843 | 4,891 | [3]224,098 | 15,640 | 87,015 | 5,115 | 49,843 | 8,193 | 51,913 |
| Change: | | | | | | | | | |
| In Week | +54 | +18 | −3,690 | −107 | +85 | +129 | +2,140 | +74 | +469 |
| In Year | +316 | +311 | +3,681 | +416 | −2,032 | +946 | +1,842 | +638 | +2,087 |
| In Year | +6.5% | +6.4% | +1.6% | +2.7% | −2.3% | +18.5% | +3.7% | +7.8% | +4.0% |

[1] All time peak. [2] Lowest since December, 1921. [3] Stocks, August 3, 1946.

## • Oklahoma

### *Hughes County Wildcat May Become Gas Pool Opener*

Wildcat in Hughes County indicates possible gas pool; Wilcox sand pool opened at Pottawatomie County; venture started in Northwest Elmore field; second test planned for Southeast Meno area; offset to prolific discovery of Eola pool staked by Sohio; Cities Service starts wildcat southeast of Antioch pool; Alfalfa County wildcat which looked promising is abandoned.

**Hughes County:** Possibility that a gas pool will be opened southwest of the old Alabama pool were indicated in testing of Harper & Turner et al's Wright 1, NW NW SW 17-9n-11e. The wildcat showed 3 million cubic feet of gas a day on a drill-stem test of the Gilcrease sand at 2480-510 feet. Drilled to the Cromwell sand, which was found dry at 3010-107 feet, the test was plugged back to 2489 feet and pipe set at 2476 feet. When drilled out the well showed an estimated 500,000 cubic feet of gas. This flow was being squeezed off to permit further testing up the hole.

**Pottawatomie County:** Although Wilcox sand production in the Greater Seminole area has been on the decline for more than a decade, occasionally a new pool, usually on a small closed structure or "pimple," is brought in. Latest Wilcox discovery is Deep Rock Oil Corporation's Black 1, SE SE NW 17-10n-2e. On a drill-stem test in the Wilcox at 6021-26 feet, tool open 64 minutes, the well flowed oil at the rate of 40 barrels hourly within 59 minutes. Operators set 17-inch casting at 6015 feet, and testing will continue. The well is northwest of Shawnee and is near the Shawnee Lake pool. Viola lime was topped at 5872 feet and the First Wilcox sand at 6013 feet.

**Garvin County:** The Carter Oil Company has staked in the Northwest Elmore pool, which offsets the recent extensioner which stretched production westward. Thompson 1, NW NE SE 15-2n-2w, also offsets a producer to the east. The area now has 7 completed oilers and 3 dry holes. Carter is the only active company in the Gibson sand pool, with 1 drilling operation and 2 locations.

**Major County:** The second test for the new Southeast Meno area of eastern Major County is planned by Amerada Petroleum Corporation and Cities Service Oil Company. The joint venture, to be called Lewis Ott 1, is ½ mile west of the R. Olsen et al gas producer which discovered the pool, and is CSW SW 4-21n-9w. Wilcox sand will be the objective. The discovery was drilled on an original Amerada block and was completed for a flow of 5½ million cubic feet of gas daily with 120 barrels of distillate per day.

**Eola Area:** Location for a test in the deep Eola pool of southern Garvin County has been staked by Sohio Petroleum Company. Howard Unit 2, SE NW NW 17-1n-2w, is a northwest diagonal offset to the pool opener, Howard 1, which was completed for approximately 2400 barrels of oil daily from the Bromide. The new test will seek the deep pay found by the discovery. There are 5 active operations in the pool at present.

**Antioch Area:** Cities Service has started operations at Ned Biffle 1, NW SW NE 23-3n-2w, wildcat 2 miles southeast of the small Antioch field in Garvin County. Pay in the area is the "Pharoah" (Pennsylvanian) sand which was discovered by Ned Biffle's Pharoah 1, NW NW NW 15-3n-2w.

**Alfalfa County:** A wildcat that looked promising and which was thought to hold strong possibilities of giving the county its first commercial oil production, has been abandoned as dry at 5985 feet. The Texas Company's McArthur 1, NE SW SW 18-28n-12w, had Mississippi lime at 5036 feet, where approximately 250,000 cubic feet of gas was tested. Wilcox sand, found at 5663 feet, showed salt water.

### Wells Completed in the United States in Week Ended August 16, 1947

**Data preliminary and subject to revision. Revised and more complete data on all completions and exploration shown in monthly summaries published in last issue of each month.**

| State or District | FIELD COMPLETIONS: New Wells: Oil | Dist. | Gas | *In-put | Dry | Total | Old Wells Deep-ened | EXPLORATORY COMPLETIONS: Oil | Dist. | Gas | Dry | Total | ALL COMPLETIONS: This Week | Last Week | This Week 1946 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | | | | | | | | | | | | | | 2 | |
| Arkansas | 6 | | | | | 6 | | | | | 1 | 1 | 7 | 7 | 5 |
| California | 21 | | | | 2 | 23 | | | | | 6 | 6 | 29 | 30 | 26 |
| Colorado | 2 | | | | | 2 | | | | | | | 2 | 7 | 2 |
| Florida | | | | | | | | | | | | | | 1 | 1 |
| Illinois | 22 | | | | 12 | 34 | | 1 | | | 3 | 4 | 38 | 53 | 37 |
| Indiana | 4 | | | | 5 | 9 | | | | | 5 | 5 | 14 | 10 | 13 |
| Kansas | 27 | | 9 | | 12 | 48 | 3 | 1 | | | 6 | 7 | 55 | 71 | 41 |
| Kentucky | 5 | | | | 2 | 7 | | | | | 1 | 1 | 8 | 9 | 9 |
| Louisiana | 27 | 2 | 1 | | 10 | 40 | | 4 | 13 | | 5 | 10 | 50 | 29 | 22 |
| N. Louisiana | 16 | 2 | 1 | | 5 | 24 | | 1 | | | 2 | 3 | 27 | 13 | 17 |
| S. Louisiana | 11 | | | | 5 | 16 | | 3 | 1 | | 3 | 7 | 23 | 16 | 5 |
| Michigan | 11 | | 2 | | 2 | 15 | | | | | 9 | 9 | 24 | 22 | 26 |
| Mississippi | 7 | | 1 | | 1 | 9 | | | | | | | 9 | 12 | 2 |
| Missouri | | | | | | | | | | | | | | | 1 |
| Montana | 3 | | | | 4 | 7 | | | | | | | 7 | 6 | 5 |
| Nebraska | | | | | | | | | | | | | | | 2 |
| New Mexico | 10 | | | | | 10 | 1 | | | | | | 11 | 15 | 9 |
| New York | 14 | | | 13 | | 27 | | | | | | | 27 | 30 | 27 |
| Ohio | 8 | | 9 | | 10 | 27 | | | | | | | | 31 | 27 |
| Oklahoma | 32 | 1 | 4 | | 18 | 55 | 5 | 1 | | | 11 | 12 | 72 | 63 | 67 |
| Pennsylvania | 20 | | 11 | 22 | 5 | 58 | | | | | | | 58 | 54 | 47 |
| Texas | 121 | 4 | 11 | | 26 | 162 | 1 | 7 | 2 | 2 | 39 | 50 | 213 | 179 | 157 |
| **DISTRICTS:** | | | | | | | | | | | | | | | |
| 1—S. Central | 3 | | 1 | | | 4 | | | | | 3 | 3 | 7 | 3 | 4 |
| 2—Middle Gulf | 9 | 1 | | | 1 | 11 | | 2 | 2 | | 5 | 9 | 20 | 6 | [1] |
| 3—Upper Gulf | 11 | 2 | | | 3 | 16 | | 1 | | 1 | 7 | 9 | 25 | 18 | 19 |
| 4—L. Gulf-S.W. | 6 | 1 | 2 | | 3 | 12 | | 2 | | 1 | 4 | 7 | 19 | 21 | 32 |
| 5—E. Central | 2 | | | | 1 | 3 | | | | | 2 | 2 | 5 | 3 | [2] |
| 6—Northeast | 9 | | 4 | | | 13 | | | | | 1 | 1 | 14 | 10 | 33 |
| 7-B—N. Central | 6 | | | | 2 | 8 | 1 | 1 | | | 8 | 9 | 18 | 24 | [3] |
| 7-C—W. Central | 3 | | | | | 3 | | | | | 2 | 2 | 5 | 8 | [4] |
| 8—West | 34 | | | | 4 | 38 | | | | | 1 | 1 | 39 | 36 | 34 |
| 9—North | 32 | | 4 | | 11 | 47 | | 1 | | | 3 | 4 | 51 | 40 | 40 |
| 10—Panhandle | 6 | | | | 1 | 7 | | | | | 3 | 3 | 10 | 10 | 4 |
| West Virginia | 2 | | 16 | | | 18 | | | | | 1 | 1 | 19 | 17 | 16 |
| Wyoming | 1 | | | | 1 | 2 | | | | 1 | | 1 | 3 | 3 | 6 |
| Total U.S. | 343 | 9 | 64 | 35 | 110 | 529 | 10 | 14 | 3 | 3 | 87 | 107 | 646 | 651 | 548 |

* Includes salt water disposal wells. [1] Middle Gulf included with Lower Gulf-S.W. [2] East Central included with Northeast. [3] North Central included with North. [4] West Central included with West.

### Superior Abandons Record Depth Well

Orders to abandon the world's deepest well were given August 16 with an official announcement that the well was dry at 17,823 feet, total depth. The well is The Superior Oil Company of California's Weller 51-11 in the Anadarko Basin, NW NW NE 11-8n-12w, about 5 miles north of Fort Cobb in Caddo County, Oklahoma.

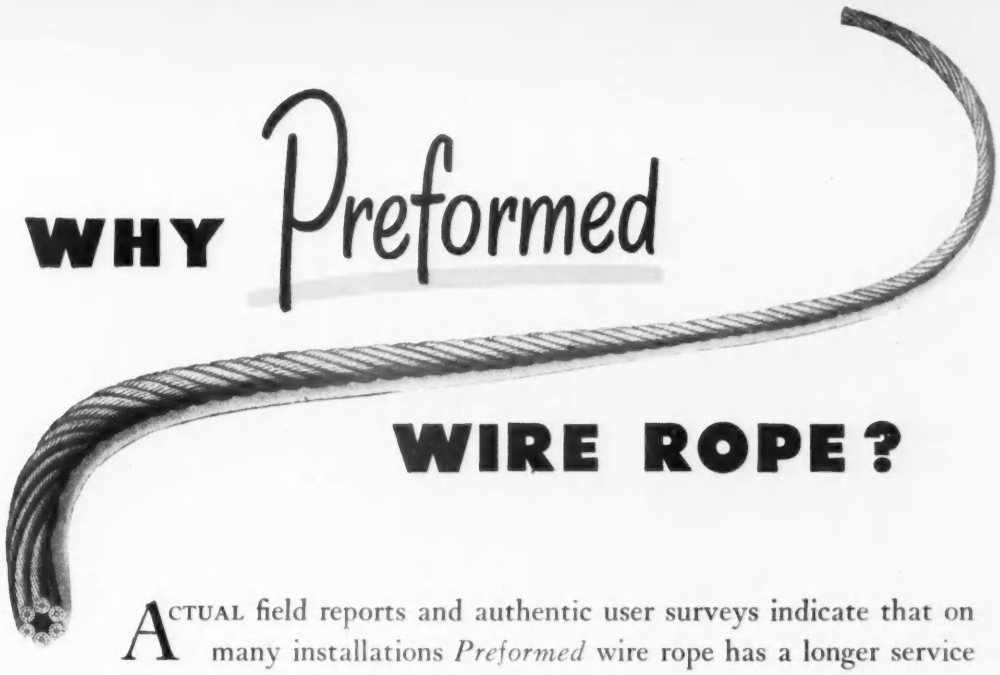
The well attained maximum depth several weeks ago but crews continued testing upper formations. Some oil and gas shows were reported at approximately 10,200 feet, presumably in the Pennsylvanian section, but no commercial production was encountered.

Crews were ordered to stand by preparatory to moving the rig to another location, possibly in the same Anadarko Basin area where geologists predict important new, deep oil and gas reserves will be discovered some day.

No detailed information as to formation tops were being released but a geologist has been assigned by the company to prepare a complete report of the operation. The report will be released later to the industry.

### *Much Entertainment Planned For Drilling Contractors*

Entertainment never before excelled in the history of the American Association of Drilling Contractors is being



# WHY *Preformed* WIRE ROPE?

ACTUAL field reports and authentic user surveys indicate that on many installations *Preformed* wire rope has a longer service life than non-preformed or standard type.

But longer life is but one of the advantages of *Preformed.* A *Preformed* wire rope is also easier and safer to handle. And here's why:

In *Preforming,* the wires and strands are scientifically pre-shaped to the exact helical positions they will assume in the finished rope . . . thus assuring freedom from internal stress.

This freedom from liveliness or twistiness makes your more flexible *Preformed* rope less likely to kink . . . enabling you to rig it more speedily . . . with less time out for repairs and replacements. Furthermore, when your *Preformed* rope becomes worn, broken wires lie flat and in place. They do not unravel, porcupine or protrude jaggedly to damage adjacent lines or injure your workmen.

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As the world's largest supplier of wire rope, we can furnish either Tiger Brand Excellay Preformed or Non-preformed Rope. There are many applications where our Excellay Preformed can improve service . . . where the increased service of Excellay more than pays for the increased cost of Preformed rope. If there is any question, our engineers are at your service. Our aim is to supply the most desirable rope for any service you have. We welcome your inquiries.

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*Cleveland, Chicago and New York*
**COLUMBIA STEEL COMPANY**
*San Francisco*
United States Steel Export Company, New York
**UNITED STATES STEEL**

planned for the convention at Long Beach, Calif., October 13-15.

Among the activities planned is a barbecue October 14 at Lakewood Country Club. Barbecue pits are to be installed for the preparation of an abundance of food. A social hour and banquet is scheduled for October 15 at the Municipal Auditorium.

Equipment of interest to the contractors will be exhibited at Convention Hall and a full schedule of technical papers will be presented.

Among the features planned for the ladies will be a style show, visit to movie studios, and a motor trip along the Pacific Coast to the historic mission at San Juan Capistrano. A boat trip for both men and the ladies has been arranged.

## • Kansas

### Barton County's Hoisington Pool Given East Extension

Hoisington pool extended east; Ash Creek extensioner assigned 200-barrel potential; testing continuing at Seward County wildcat; new pool may be opened west of Paradise Creek area.

**Barton County:** The Hoisington pool has been extended ½ mile eastward by Derby Oil Company et al's Borger 1, NW NW SW 22-17s-13w. The test swabbed 9 barrels of oil per hour natural in 6 hours from the Arbuckle lime, 3402-407 feet, total depth. Following acid treatment the well swabbed 10 barrels hourly.

**Pawnee County:** Bay Petroleum Company et al's Smith 1, CEL NE NE 12-21s-16w, which extends the Ash Creek pool almost a mile south, has been assigned a potential of 272 barrels daily from the Arbuckle lime, 3754-90 feet. Considerable gas was encountered at 3766-88 feet.

**Seward County:** Testing continued at Stanolind Oil & Gas Company's pool opener 21 miles northeast of Liberal and 15 miles from Hugoton gas field production. Wheatley 1, NE NE SW 23-33s-31w, recovered 2690 feet of 41-gravity oil from the Lansing lime at 5099-117 feet, where good gas shows also were logged. Operators plan to test the Arbuckle lime before efforts are made to complete the well. Lansing was topped at 4314 feet, and the Mississippian was found at 5602 feet.

**Rooks County:** A new pool apparently will result from testing of Harbar Drilling Company et al's Baumgarten 1, NE NE NE 25-9s-19w, 2 miles west of Paradise Creek pool. Several shows of oil were found in the Arbuckle lime at approximately 3833 feet.

## • New Mexico

### Richfield's Chaves County Wildcat Quits in Granite

Chaves County wildcat abandoned in granite; Yeso test on southeast edge of Monument field is failure; Drinkard area outpost correlates low.

**Chaves County:** Richfield Oil Corporation et al's Mullis Unit 1, C SE SW 21-15s-29e, wildcat that failed to encounter showings in thick section of Ordovician beds, was abandoned at 12,153 feet in granite, entered at 12,110 feet.

**Lea County:** Mid-Continent Petroleum Corporation's Reeves 2, NWC 29-20s-37e, offsetting regular Permian production on the southeast edge of the Monument field, was abandoned at 7150 feet in dry Yeso without shows below the San Andres. The Glorietta was entered at 5300 feet. Amerada Petroleum Corporation's Phillips 5, scheduled Ellenburger test for the apex of the Monument structure with flowing production assured from the Glorietta to establish a new pay, was drilling Yeso at 7164 feet.

Stanolind Oil & Gas Company's Southland 1, C SW NE 9-21s-37e, wildcat 1¼ miles north of Yeso production in the Drinkard area, was drilling at 5600 feet and correlating about 100 feet low. However, oil and gas showings in the 3700-900 foot Permian warrant completion try through perforations of pipe set at 3860 feet after fulfilling 8000-foot depth contract.

Repollo Oil Company's State 2, Lease 367, C NW SW 36-21s-37e, north edge of the Paddock field, tested water at 7460-7535 feet and was logging granite and lime at 7647 feet. It is contracted to explore the Ellenburger, with offset lease owners contributing.

## • West Texas

### Ector Wildcat Has Impressive Flow of Ellenburger Crude

Ector County wildcat scores impressive flow of sweet crude from Ellenburger, making 2 oil zones for the area; first Ellenburger test for Dollar Hide field logs oil-saturated dolomite, with 3 promising oil zones above; Crockett County wildcat encounters additional pay in deepening towards Ellenburger objective; Sterling County has promise of first commercial producer.

**Ector County:** Humble Oil & Refining Company's Yarbrough-Allen 1, C NW NE PSL 18, Block B-14, 7 miles west by south of the Penwell-Ellenburger pool and 10¾ miles south by east of the Wheeler multi-pay field, established an important new reserve of sweet crude in developing flush production from Ellenburger, topped at 10,500 feet with elevation 2893 feet. Pay was entered at 10,515 feet, and a drill-stem test at 10,525 feet resulted in a flow of gas, mud and oil, with recovery consisting of 4000 feet of oil- and gas-cut mud and 5500 feet of oil. A drill-stem test at 10,523-48 feet resulted in a flow of 129 barrels of 41.6-gravity oil the first hour and 119 barrels the second hour, with gas volume rated at 2½ million cubic feet daily. A third test at 10,547-68 feet yielded a flow of 60 barrels of oil the first 30 minutes and 55 barrels each during second and third 30-minute periods, with gas-oil ratio 871/1. The well is due to be deepened before running pipe for completion.

Yarbrough & Allen 1 confirmed its favorable structural position in indicating probable commercial oil production from the Devonian, topped at 8190 feet. The subsea depth and interval between key geological markers correlate remarkably close with those of Devonian and Ellenburger producers in the Wheeler field, but a syncline probably lies between as Humble's Vest 1, C NW NW PSL 17, Block B-8, is checking unusually low in drilling lime, chert and shale at 8835 feet.

Humble's discovery is on a 25-824-acre lease taken in 1937 at $3 per acre as protection against a 7221-foot failure to the southeast and in Crane County. Magnolia Petroleum Company had posted a substantial dry-hole contribution to Humble's prospect due to owning lease on 640 acres immediately north that will be given immediate test to forestall October 4 expiration.

**Andrews County:** The Pure Oil Company et al's Cowden 1, north outpost for the Dollar Hide field with oil production indicated in 3 upper zones, entered the Ellenburger at 9990 feet, and logged oil-stained dolomite with porosity in drilling to 10,033 feet. A drill-stem test was pending. The high structural position of this outpost gave it a high rating as a prospective Ellenburger-pay discovery since entering the Devonian at 7560 feet.

Stanolind Oil & Gas Company's Sims 1, C SE SE PSL 16, Block A-39, north offset to the northwest extension Ellenburger producer in the Nelson field, was drilling at 10,840 feet in Simpson, topped at 10,060 feet, with elevation 3385 feet, or 361 feet low. Although eliminated for Ellenburger production, pipe probably will be set for a completion try in the 7200-foot Clear Fork, which showed promise for oil production.

**Crockett County:** Byrd & Frost, Inc., and Gulf Oil Corporation's Mayberry-Shell 1, northeast corner of H&TC Ry. 39, Block 31, wildcat that aroused considerable interest due to heavy gas flow with oil at 6295-6345 feet, encountered more oil and was drilling barren chert and lime at 6298 feet. A drill-stem test at 6306-89 feet yielded gas flow at the rate of 394,000 cubic feet daily, and 37.9-gravity oil at the rate of 25 barrels per hour, allowing for 13-foot downward correction in measurements. A retest at 6289-389 feet yielded sweet gas at the rate of 2,616,000 feet daily, and a spray of 64.6-gravity distillate. This wildcat was credited with having entered the Devonian at 6293 feet with elevation 2660 feet, but the producing zone is now tentatively classed as Pennsylvanian. In farming out the acreage for a test, Shell Oil Company specified the drilling of an Ellenburger test, or 9000-foot depth.

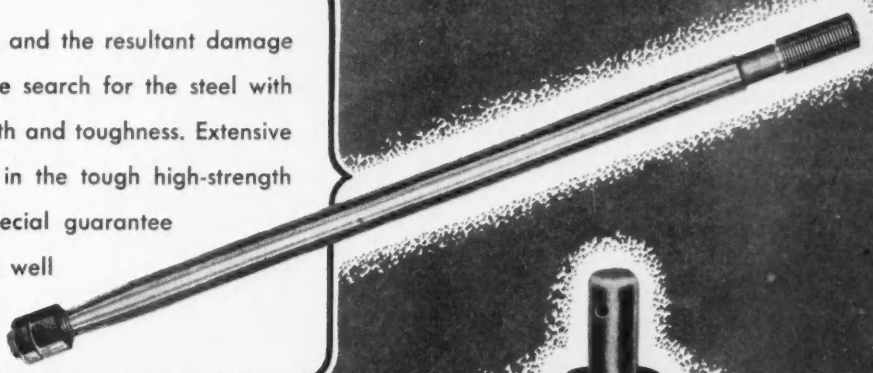
Humble's Mitcham 1, discovery on a large controlled leasehold, flowed 121.9 barrels of 41.6-gravity oil, gas-oil ratio 1105/1, on 6-hour natural test through ¼-inch choke for completion from Ellenburger perforations at 8092-105 and 8112-22 feet. Humble has spudded a northeast offset. Humble Pipe Line Company will build a line to Kemper terminal, Reagan County, if production embraces an appreciable area in order to segregate this sweet crude, although its combination 10- to 12-inch carrier to Ingleside crosses the drilling site.

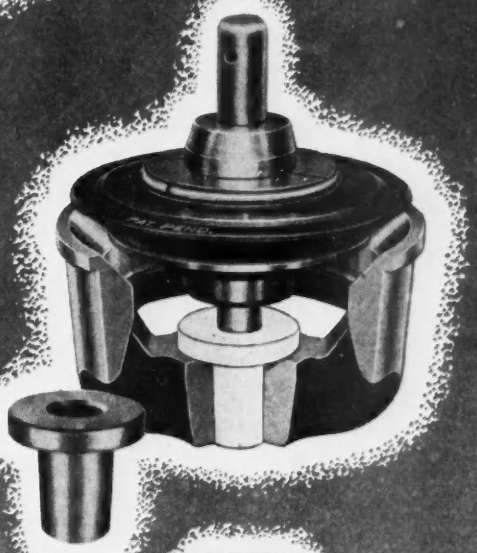
**Sterling County:** Plymouth Oil Company's Frost 1, C NE SW H&TC 29, Block 2, entered a firm bid to become the county's first commercial producer after developing nominal gas show in the Pennsylvanian (Strawn), topped at 8210 feet, and more promising production from Ellenburger, topped at 8354 feet with elevation of 2604 feet. Barren Mississippian was entered at 8280 feet. A drill-stem test at 8359-69 feet yielded gas to the surface within 15 minutes, and the recovery consisted of 580 feet of 43-gravity oil and 270

## Examples of
## MISSION LEADERSHIP IN
# *Metallurgy and Heat Treating*

**CORRECT STEELS — CAREFULLY HEAT TREATED, CONTRIBUTE TO THE SUCCESS OF THESE MISSION PRODUCTS.**

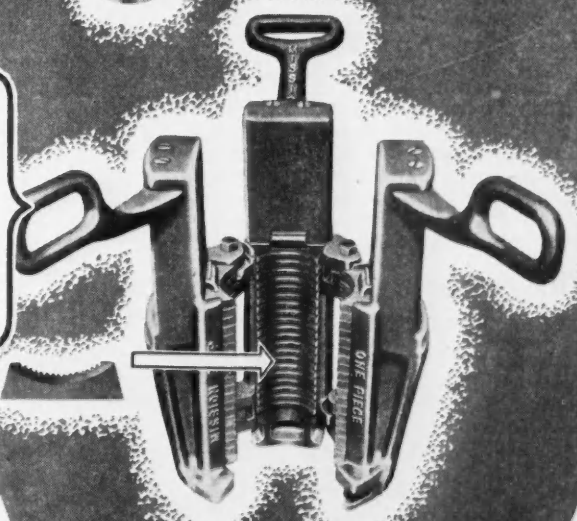
To solve the problem of rod breakage and the resultant damage to pump, Mission instituted an intensive search for the steel with the best possible combination of strength and toughness. Extensive tests by Mission metallurgists resulted in the tough high-strength Mission rod that bears the Mission special guarantee which covers damage to the pump as well as replacement of the rod.





Steel requirements for maximum hardness differ from those for maximum toughness. The Mission Silver Top Valve design permits making the wear-taking bushing for maximum hardness and the valve seat for maximum toughness. This results in better valve service for Mission customers.

Mission metallurgists experimented with hundreds of combinations of steel and heat treating to get the greatest practicable hardness of Mission slip-dogs. This extreme hardness is your assurance of the long life and positive grip of Mission slips.

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HOUSTON, TEXAS

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feet of heavily oil- and gas-cut mud. No water was indicated in deepening to 8379 feet, where a drill-stem test failed. Owners will set pipe for completion.

**Winkler County:** Magnolia Petroleum Company's Wheeler 1, C SE SE PSL 13, Block 40, and 2⅛ miles northeast of a 11,980-foot Ellenburger failure, is a prospective discovery from the Devonian, topped at 9340 feet with elevation of 3009 feet, or 339 feet high. An incomplete drill-stem test at 9346-86 feet yielded 1530 feet of gas-cut mud and 240 feet of nominally gas-cut mud on retest. A test at 9398-9447 feet failed, and a test at 9317-9447 feet recovered 2590 feet of gas-cut mud. Drilling was resumed after this run of the testing tool. This wildcat is the forerunner of an oil discovery due to structural relief encountered in the pre-Permian beds when correlated with failures west and southwest. Wheeler 1 logged the Permian-Pennsylvanian contact at 8080 feet, registering 69 feet high to nearest failure, and entered the Mississippian at 8250 feet, or 404 feet high.

Magnolia's State-Walton 1, NW NE SE PSL 7, Block B-3, deepened producer on the extreme west edge of the Keystone-Colby field and ⅞ mile southeast of its Ellenburger producer in the Kermit-Ellenburger 2-well field, was drilling at 8290 feet after failing to complete a drill-stem test at 8215-57 feet. The Devonian was entered at 8210 feet, with elevation 2921 feet, correlating 21 feet to the Ellenburger well that passed up a gas show in the Devonian, which was not considered capable of commercial production in the district at that time.

**Upton County:** Slick-Urschel Oil Company's Alford 1, P. B. Scott Survey and 10 miles northwest of the Big Lake field, was drilling at 9620 feet in sidetracked hole, having plugged back from 10,384 to 8504 feet. A drill-stem test at 9410-94 feet in Pennsylvanian, topped at 9590 feet, yielded gas to the surface within 15 minutes from a maximum rate of 250,000 cubic feet daily. The well headed while pulling drill pipe, and the recovery consisted of 4680 feet of 45-gravity oil, including 25 percent rotary mud. Plymouth Oil Company, original owner, made an unsuccessful attempt to complete from Devonian, topped at 10,018 feet, after the well had been shut in 4 years, and developed a small volume of gas from perforations at 9660-95 feet before discontinuing operations. The new owners are contracted to deepen to Ellenburger, else drill a second well on leases assigned by Plymouth from its original block.

## Contract Let to Construct Plant in Keystone Pool

Contract has been awarded the Jones and Laughlin Supply Company, Tulsa, to design and construct a natural gasoline plant in the Keystone pool of Winkler County, Texas. The plant will be operated by Richardson and Bass, Fort Worth, associated with Phillips Petroleum Company and Sinclair Prairie Oil Company. The plant will have an initial capacity of 55 million cubic feet of gas daily estimated to yield 90,000 gallons of natural gasoline, but will be laid out so that additional equipment can be added each year until a capacity of 100 million cubic feet of gas and 175,000 gallons of gasoline per day can be processed and produced.

# • North Texas

## Strawn Production Promised By Grayson County Wildcat

Grayson County wildcat shows promise of oil production from Strawn; Cooke County has unusually low-gravity prospective discovery; isolated wildcat in Denton County showing for pumper.

**Grayson County:** Standard Oil Company of Texas' Covey-Bates Unit 1, J. B. McAnair Survey A-763, 2 miles northwest of Sherman, was running pipe to complete after indicating high-gravity oil production from Strawn at 3729-89 feet. A drill-stem test at 3729-46 feet yielded 124 feet of oil-and gas-cut mud, and a test at 3778-89 feet returned gas to the surface within 7 minutes with recovery consisting of 1330 feet of free oil and 375 feet of oil- and gas-cut mud. The well is 1¼ miles northeast of the company's 11,541-foot Ellenburger failure that passed up numerous oil showings in the Strawn series.

**Cooke County:** P. G. Lake, Inc., and Paul Scott's Pace 1, E. Yeaman Survey A-1173, and 1½ miles south by west of Gainesville, is credited with showing for a commercial pumper, with the oil testing 6 to 8 degrees gravity, and pipe will be set for completion at 2807 feet in Ellenburger, topped at 2750 feet. Broken oil pay was passed up in Strawn at 2632-51 feet. Nearby failures will restrict production to a small area. Northern Ordnance, Inc.'s, Schbeiderjan 1, E. Yeaman Survey, and 1¼ miles southwest, was abandoned at 2908 feet in Ellenburger, topped at 2830 feet with elevation 788 feet.

**Childress County:** Amerada Petroleum Corporation's Middleton 1, C SE NW W&NW 388, Block H, was making a drill-stem test after completion of rig repairs with the hole bottomed at 8401 feet. Top of Ellenburger was tentatively called at 8390 feet, with elevation 1669 feet, correlating low for the area.

**Denton County:** The Texas Company's Saunders 1, John Ayers Survey A-2, and 9 miles southeast of the Bolivar field, nearest production, swabbed 42 barrels oil and 82 barrels of water in 24 hours after using 500 gallons of acid. Production is from Strawn perforations at 2405-13 feet, having plugged back from 2508 feet.

## Three Companies to Build and Operate Products Terminal

A new firm, Waterway Terminals, Inc., has been formed by Cities Service Oil Company, Western Oil & Fuel Company and the Petroleum Heat & Power Company, for the construction and operation of a new $750,000 petroleum products terminal for metropolitan Chicago. Ownership of the new company is divided equally among the three partners.

The terminal will be located on a 62-acre tract on the south bank of the Sanitary District Canal. Construction will start in September on storage capacity aggregating 460,000 barrels.

Waterway Terminals, Inc., is headed by Henry Baskerville, president of Western Oil & Fuel Company, Minneapolis, Minn., and vice president is Dayle G. Malone, vice president of the Petroleum Heat & Power Company of Illinois. Edward L. Stauffacher, superintendent of operations for Cities Service at Chicago, is secretary.

## Rail Commission Office To Remain in San Antonio

A conference last week between operators and the Texas Railroad Commission resulted in an agreement that the Commission's district office in San Antonio will be continued with reduced force. Previously, the governing body announced that beginning September 1 all business for Districts 1 and 2 would be transacted through the Refugio office. Reports formerly made to San Antonio will continue to be directed there, just as in the past.

## Rack Erected

Scurlock Oil Company is erecting a ten-car capacity rack on the Texas & Pacific Railroad near Colorado City, Texas, in connection with the construction of a 25-mile, six-inch crude outlet for the Jameson seven-well field, Coke County. The line will be completed late this month.

## Wyco Line Delayed

Construction of the Wyco Pipe Line Company (Standard Oil Company of Indiana, The Texas Company and Socony-Vacuum Oil Company) products line has been delayed by material shortage, labor and weather conditions until the line is now approximately a month behind schedule. Completion is planned for early next year. The company is constructing terminals at Cheyenne and Denver, with bulk plants for the three companies to be constructed at the terminals.

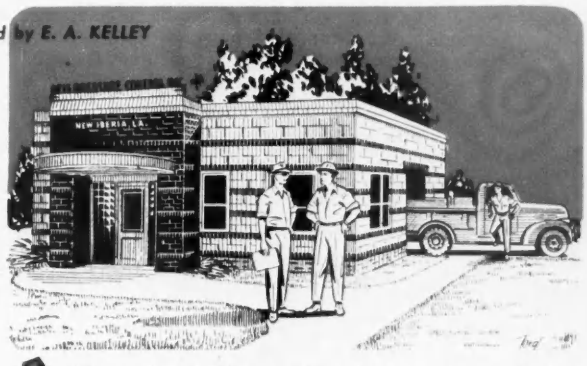
## THE OIL MAN'S CALENDAR

| | |
|---|---|
| AUG. 25–27 | Annual Appalachian Gas Measurement Short Course, West Virginia University School of Mines, Morgantown. |
| SEPT. 10–11 | Rocky Mountain Oil & Gas Association, Fall Meeting, Casper, Wyo. |
| 17–19 | National Petroleum Association Annual Meeting, Atlantic City, Traymore Hotel. |
| 23–24 | Fall Meeting, Petroleum Division AIME, Los Angeles, Elks Club. |
| 29–30 | Annual Meeting Independent Petroleum Association of America, Oklahoma City. |
| 28 to Oct. 2 | Regional Meeting, AIME (Includes 2-day Petroleum Division Session), Denver. |
| OCT. 6– 8 | American Gas Association, Annual Meeting, Cleveland. |
| 6– 8 | ASME Petroleum Mechanical Engineering Conference, Houston |
| 8–10 | Fall Meeting, Petroleum Division, AIME, Tulsa, Mayo Hotel. |
| 13–15 | Annual Meeting, American Association of Oil Well Drilling Contractors, Long Beach, Calif. |
| 16–17 | Texas Mid-Continent Oil & Gas Association, Annual Meeting, San Antonio, Gunter Hotel. |
| NOV. 10–13 | American Petroleum Institute Annual Meeting, Chicago, Stevens Hotel. |
| DEC. 1– 5 | ASME Annual Meeting, Chalfonte and Haddon Hall, Atlantic City, N. J. |
| 1948 MAY 15–22 | International Petroleum Exposition, Tulsa. |

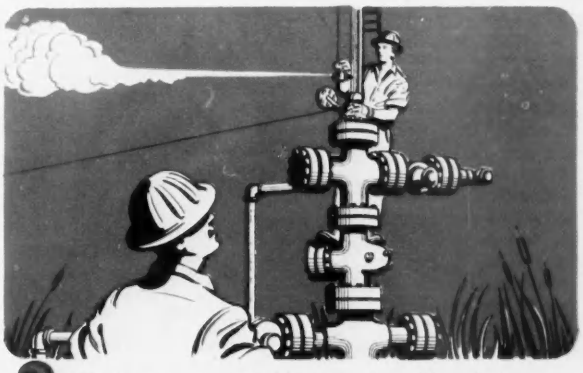
Nomads Chapter monthly meetings: LOS ANGELES, second Wednesday, Jonathan Club. HOUSTON, second Monday, Ye Olde College Inn, NEW YORK, first Monday, Louis Sherry's TULSA, third Wednesday, Hotel Tulsa.

# Otis saves company expense of killing well and pulling 9900 feet of tubing by locating and packing-off leak at 3420 feet

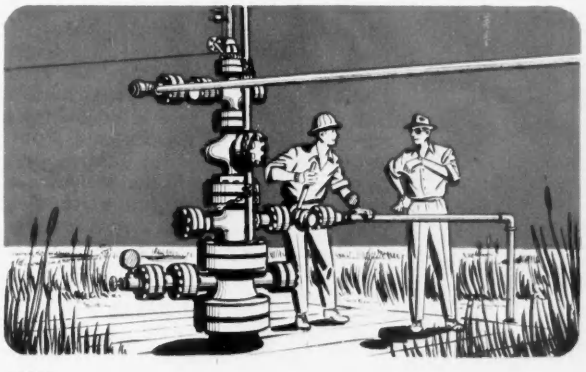
as told by E. A. KELLEY



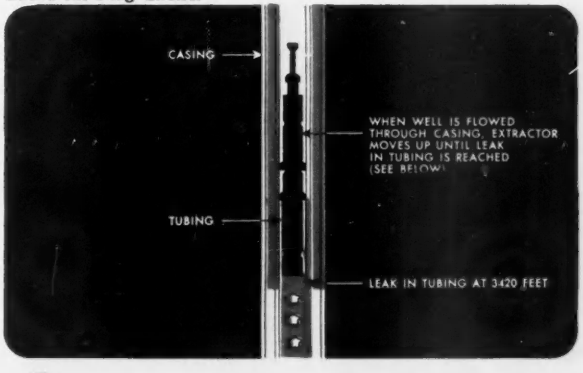

**1** "We received a call at our New Iberia, La., field office and warehouse on May 14, 1947, to try and locate a tubing leak in a 9900 foot well at Lafourche Crossing. The operators reported that until recently the well had been producing normally at 3500 p.s.i. surface pressure. However, changes of tubing and casing pressure seemed to indicate that a large hole had developed in the tubing. Now, unless we could quickly locate and stop the leak, they were faced with the necessity of killing the well and pulling and re-running 9900 feet of tubing.



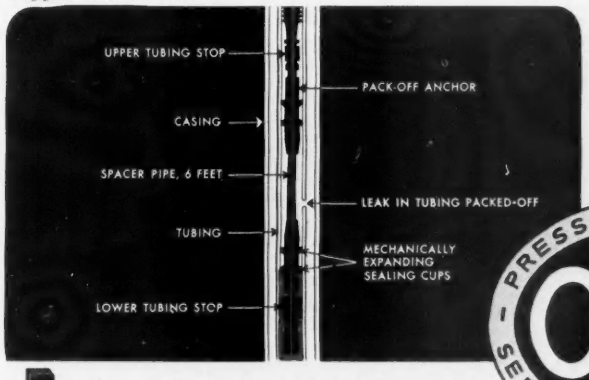
**2** "Having experienced this sort of problem before, we rushed a service truck to the well immediately and rigged up our high-pressure lubricator and wire line equipment. We then ran a Type DB Otis Plug Choke (a regular Type B Mandrel Assembly made up with a Type D Plug Bean) under pressure on a steel measuring line and plugged the tubing at 5000 feet. This made it possible for us to test the upper 5000 feet for the leak. When we opened the bleed-off valve on the lubricator, tubing and casing pressure dropped to zero — indicating that the hole was above the Plug Choke.



**3** "Thus, having localized the damaged joint at a point somewhere above 5000 feet, we pulled the Plug Choke, set a stop, and ran a Type D Otis Choke Extractor to the same depth. The running tools were released and pulled back up into the lubricator and the well was flowed through the casing. This procedure caused the Choke Extractor to flow back up the tubing until it reached the point where the flow leaked through the tubing into the casing. After waiting several minutes we ran the running tools back in the hole and found that the Choke Extractor had stopped at 3420 feet.


CASING
WHEN WELL IS FLOWED THROUGH CASING, EXTRACTOR MOVES UP UNTIL LEAK IN TUBING IS REACHED (SEE BELOW)
TUBING
LEAK IN TUBING AT 3420 FEET

**4** "Therefore, having located the hole in the tubing, the Choke Extractor was pulled and preparations were made to pack-off the leak. This was accomplished by making up a Type F Otis Pack-off Anchor with 6 feet of spacer pipe between the sealing cup assemblies. (The Pack-off Anchor consists primarily of an upper and lower pack-off assembly, each equipped with mechanically expanding cups. These sections are separated by a spacer pipe of desired length). We then re-set the stop; installed the Pack-off Anchor on top of the stop; and followed that with a second stop to prevent the sub-surface control from being blown up the tubing.




**5** "Thus, with the damaged tubing sealed off above and below the leak, flow was directed through the bore of the Pack-off Anchor and the well restored to normal operating conditions. The company was very well pleased with the time and money saved by this operation and will continue to produce the well with the Pack-off Anchor in the hole."

**This is the fifth in a series of advertisements covering actual installations of Sub-Surface Controls and subsequent service as described by Otis Pressure Control, Inc., field personnel. Except for necessary deletion of company and trade names these reports are unedited. For further details on equipment and service, write Otis Pressure Control, Inc., P. O. Box 7206, Dallas.**

(T-6)

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EXPORT SALES AND SERVICES: **OTIS PRESSURE CONTROL EXPORT, INC.**, POST OFFICE BOX 7206, DALLAS, TEXAS, U. S. A.; CARACAS, SOUTH AMERICA

## • East Texas

### Gas-Distillate Discovery in Wood County Officially Gauged

Gas-distillate discovery in Wood County given official gauge; Anderson County prospective discovery cased to complete; south outpost for Fairfield area yields gas from Rodessa.

**Wood County:** Humble Oil & Refining Company's Rio Oil Corporation 1, Jesse Walker Survey, has been completed as an exceptionally wet gas-distillate discovery in testing 11 million cubic feet of gas on open flow calculation, with 444 barrels of 62-gravity distillate daily and 5,580,000 cubic feet of gas on 3/8-inch choke. This production is from perforations in the Gloyd (Rodessa) at 7932-50 feet. The Hill zone of the Rodessa at 7702-43 feet also indicated commercial gas-distillate production, but will not be produced in view of the performance of the lower pay.

Humble's Phillips 1, James McAnulty Survey and within the Hawkins field, failed to encounter deeper production in drilling through the Paluxy to 7081 feet, and will try for completion in the Woodbine after plugging back.

**Anderson County:** Sanders and Murchison's Broadway 1, I. P. Reinhardt Survey and prospective oil discovery from the Rodessa series, cemented pipe at 9987 feet to complete after proving dry in Travis Peak at 9880-10,187 feet. This wildcat is on the Blackfoot structure, and if it makes a commercial producer considerable development will occur immediately due to short-term leases held by majors in the vicinity of the well.

Continental Oil Company and Byrd Frost, Inc.'s, Royall 1, Slocum prospect, was abandoned in barren Travis Peak at 8706-9388 feet after taking sidewall cores.

**Freestone County:** The Texas Company's Irvin 1, a mile southwest of Pettit gas production in the Fairfield multi-pay field, tested an undetermined volume of gas from Rodessa at 8057-76 feet, and was making new test of the zone at 8095-110 feet.

**Harrison County:** Southern Production Company's W. H. Cargill Estate 1, wildcat 3 miles east of Scottsville in P. Dougherty Survey, was due for a drill-stem test after coring at 6430-47 feet. Stanolind Oil & Gas Company was drilling at 9695 feet in George Slaughter 1 with no shows. The wildcat is in J. E. White Survey, 9 miles north of Marshall in the Woodlawn area.

**Shelby County:** After shooting and squeezing 4 intervals, Humble Oil & Refining Company was scheduled to begin production tests in Elzie Fleming et al 1, the possible opener of oil pay in the Huxley field. The well was drilled to 7450 feet in Travis Peak and was credited with oil indications in Rodessa at 5542-77 feet and wet gas indications in Pettit at 6594 feet.

### East Texas Field Producing Properties Are Purchased

One-third interest acquired by Joe A. Humphreys, Dallas producer, in East Texas field properties of the Beacon Oil Refining Company has been purchased by Sol Brachman and associates and General American Oil Company of Texas for $1,775,000. The Beacon properties, consisting of 45 leases and 400 acres, with 114 wells prorated to a base allowable of 1500 barrels daily, were purchased for $5 million May 31 by Brachman et al, Humphrey, W. L. Kistler, Jr., and Al Meadows, president of General American. The latter 2 subscribed to one-sixth interest each. General American was designated as the operating company by the purchasers.

Omega Oil Company has sold its Nicholson 25-acre lease, M. Mann Survey, with five wells prorated to 100 barrels daily, in the Longview sector of East Texas field to W. L. Pickens and Tom Cook for $175,000, including $25,000 cash and the remainder payable from three-fourths of the net production. Omega purchased this lease with one well in May, 1932, for $67,000.

### Gas Used For Lift Purposes And Then Sold Is Taxable

Natural gas which has been used to bring oil to the surface, processed, returned to the formation, used again for oil lift, and then sold is subject to taxation in Texas, according to a ruling last week by Attorney General Price Daniel. State Comptroller George Sheppard requested the opinion.

Sheppard's question arose when Union Producing Company maintained that gas which is sold after use for pressure maintenance was exempt from taxation. The Comptroller pointed out that gas used for pressure maintenance is not subject to taxation, and neither is gas used for oil lift. But his question was as to whether it should be taxed when it is sold as fuel gas, after use for exempt purposes.

## • Southwest Texas—Lower Coast

### New Pays Opened in Midway And West Sinton Fields

New pay zones opened at Midway and West Sinton fields; wildcat east of East Peters field testing; deep test on west flank of Kelsey runs log and takes sidewall samples.

**San Patricio County:** A new oil pay zone at Midway field was opened when F. M. Boykin Jr.'s Hill-Jones Community 1, on the west flank of the field, started making oil from perforations at 6177-82 feet which originally produced gas and condensate. The well has been retested and classified as an oil well. It gauged 82 barrels of 44.8-gravity oil daily on ⅛-inch choke with gas-oil ratio 2440/0, tubing pressure 1200 pounds, casing pressure 2100 pounds, and 20 percent water. This well is 1400 feet from the south line and 467 feet from the east line of the southwest quarter of Sect. 72, Geo. H. Pauls Subdivision of CFP Co. Lands.

Arnold O. Morgan Oil Company has reworked the old Jones & Morgan H. S. Smith 1, dry hole at West Sinton field and completed it in a new pay sand. From perforations at 1490-95 feet the well flowed 45 barrels of oil daily plus 37½ percent salt water on ¼-inch choke with gas-oil ratio 214/1, tubing pressure 60 pounds, and casing pressure 660 pounds. The hole was abandoned originally in 1939 and reworked recently by setting 4½-inch liner to 4200 feet. On first production tests salt water was

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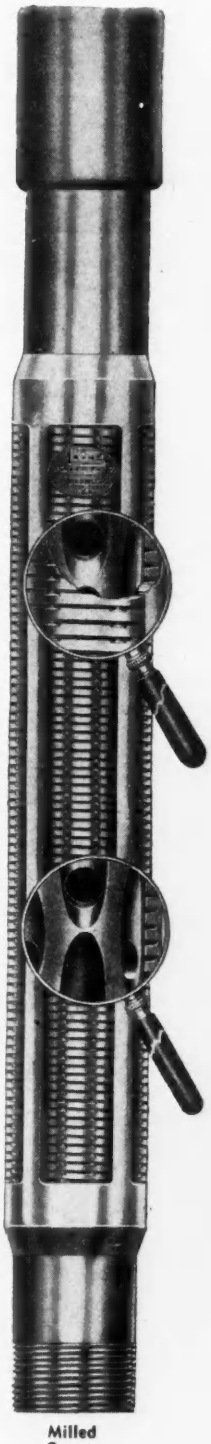
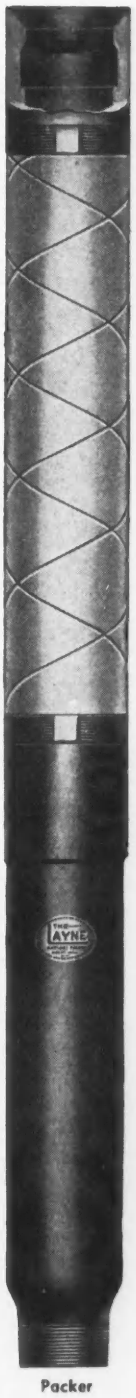


Milled Groove



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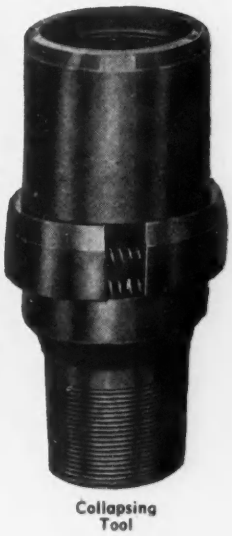

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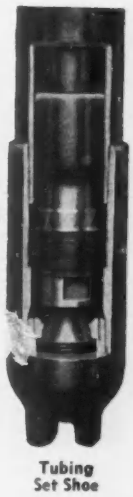
Letting in Tool



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tested at 3946-48, 2520-25 and 3303-06 feet.

**Duval County:** Cox & Hamon et al are testing Dougherty 1-A, wildcat 3½ miles east of the East Peters field. Drilled to 3316 feet, casing was set to test a sand with a show of oil at 2276-2301 feet. Perforations have been made at the 2278-foot level where the well tested oil, mud and wash water. Further tests are being made.

**Jim Hogg County:** Humble Oil & Refining Company's N. Pena et ux 3, deep test on the west flank of the Kelsey field ran electrical log to total depth of 6564 feet and took sidewall samples.

## • South Central Texas

### *Wildcat in Charlotte Area Cores for Navarro Sand*

Wildcat southwest of Charlotte coring for pay sand; new wildcat located 1½ miles southwest of Rossville; Luling deep test plugs back and making production tests.

**Atascosa County:** Kirkwood & Morgan's McLean 1, wildcat 1½ miles southwest of Charlotte field, cored below 5177 feet for the Navarro sand, 1 of the pay zones at Charlotte field. This test is in the north corner of the J. Poitevent Survey 1, A-695, on a 151-acre lease.

A new wildcat is Pegg Brothers' Oscar Brooks 1, to be drilled 9 miles west of Poteet and 1½ miles southwest of Rossville. It is 330 feet from the west line, 990 feet from the south line, and 700 feet from the north line of a 162-acre lease in F. de la Garza Survey 46, being east of 2 tests drilled on the Pratt land by J. S. Stahl and Pegg Brothers, both of which tested oil and water in the Navarro zone.

**Caldwell County:** Magnolia Petroleum Company's Trammell 20, deep test at Luling field, has plugged back from 3000 to 2177 feet and was making production tests. On latest gauge the well pumped 220 barrels of oil and 300 barrels of water daily from perforations at 2149-77 feet.

## • Middle Texas Coast

### *Slick-Wilcox Area Discovery Is Given Production Tests*

Production tests run on discovery northeast of Slick-Wilcox field; new pay discovery at La Salle field; casing set in wildcat northwest of Refugio; new producing area in Bee County named Minoak; Sunray tries to reduce gas-oil ratio in new discovery.

**Goliad County:** On production test Dan Auld's Heinrich 1, gas-condensate discovery 3½ miles northeast of the Slick-Wilcox field, flowed 3,200,000 cubic feet of gas daily from perforations in the Slick sand at 7560-66 feet. Total depth is 7774 feet with 5½-inch casing set to 7770 feet. Prior to setting casing a drill stem test of the Luling sand at 6747-54 feet recovered salt water.

**Jackson County:** A new pay discovery at La Salle field is Sterling Oil & Refining Company's J. M. Bennett 1-Y. From perforations at 6298-6314 feet, the well flowed on production test 65 barrels of 51-gravity condensate daily on ¼-inch choke with 2400 pounds tubing pressure and 2500 pounds casing pressure. Total depth is 7720 feet with 5½-inch casing set to 6650 feet. Another new pay zone at 6610-13 feet was tested, flowing gas and a spray of condensate with 2500 pounds working pressure.

**Refugio County:** La Gloria Corporation & Skelly Oil Company have set 5½-inch casing to 6462 feet at Jamie Hynes 1-B, wildcat 3 miles northwest of Refugio and 5850 feet southwest of La Gloria & Skelly's Hynes 2 recent gas discovery. The well originally drilled to 6742 feet where drill pipe twisted off and hole was then sidetracked at 6608 feet and drilled to 6462 feet.

**Bee County:** The new producing area recently opened by Rowan and Hope's Rio Oil Company 1 has been named Minoak. The discovery is in the J. R. Carney Survey about 2 miles southwest of the Yoward field.

**Goliad County:** Sunray Oil Corporation's Brandt 1, discovery 1½ miles northwest of the Weser field, was still trying to cut down high gas-oil ratio. Perforations at 7708-13 feet were squeezed and casing reperforated at 7713-18 feet with 23 shots where on drill-stem test the well developed 1600 pounds working pressure on 5/32-inch choke and recovered 837 feet of oil and 90 feet of water but still had a high gas-oil ratio. These perforations were squeezed and a drill-stem test made of the perforations before reperforating for another test. Total depth is 8513 feet with 5½-inch casing set to 7770 feet.

## • Upper Texas Coast

### *Sugar Valley Field Receives Mile Southeast Extension*

Sugar Valley field production extended a mile southeast; Fort Bend wildcat logs pay sands; Sabine Tram field production extended east; Cockfield production opened in Coldspring field.

**Matagorda County:** Sugar Valley field production has been extended a mile southeast by Humble Oil & Refining Company's Truitt & Gravier et al 1. On initial gauge the well flowed 172 barrels of 28.1-gravity oil daily through ¼-inch choke with 350 pounds flowing pressure on the tubing and gas-oil ratio 663/1. Total depth is 11,486 feet with 5½-inch casing set to 10,296 feet and perforated at 9970-75 feet for completion.

**Fort Bend County:** Jack Frazier & Grubb & Hawkin's J. R. Farmer 1, wildcat 1½ miles southwest of the Clodine field in I&GN Survey A-353, is reported to have logged 4 pay sands. Sidewall samples were taken following running of the electric log, and 1 sand at 7258-90 feet carried oil and gas. A drill-stem test at 7285-92 feet recovered salt water with some oil. Operators may drill deeper before setting pipe.

**Newton County:** At Sabine Tram field Humble's Hankamer et al 4 extended production ¼ mile east. On initial gauge the well flowed 165 barrels of 39.1-gravity oil daily through ⅛-inch choke with 1390 pounds tubing pressure and gas-oil ratio 627/1. Total depth is 8053 feet with casing perforated at 7986-90 feet for completion.

**San Jacinto County:** Cockfield production has been opened in the Coldspring field which previously produced only from the Wilcox. Butcher-Arthur Inc.'s Foster 2-D, recently taken over from Continental Oil Company and drilled originally by Navarro Oil Company as the Foster Lumber Company 2, has been plugged back from 7865 feet and perforated at 4414-22 feet for completion. On potential the well flowed 107 barrels of oil daily through 7/64-inch choke with gas-oil ratio 600/1. Original completion was from open hole at 7861-65 feet for 38 barrels of oil daily through 7/64-inch choke.

## • South Louisiana

### *Northeast Mud Lake Field Has Confirmation Producer*

Production at Northeast Mud Lake field confirmed; Kerr-McGee to drill 2 Gulf of Mexico wildcats; second dry


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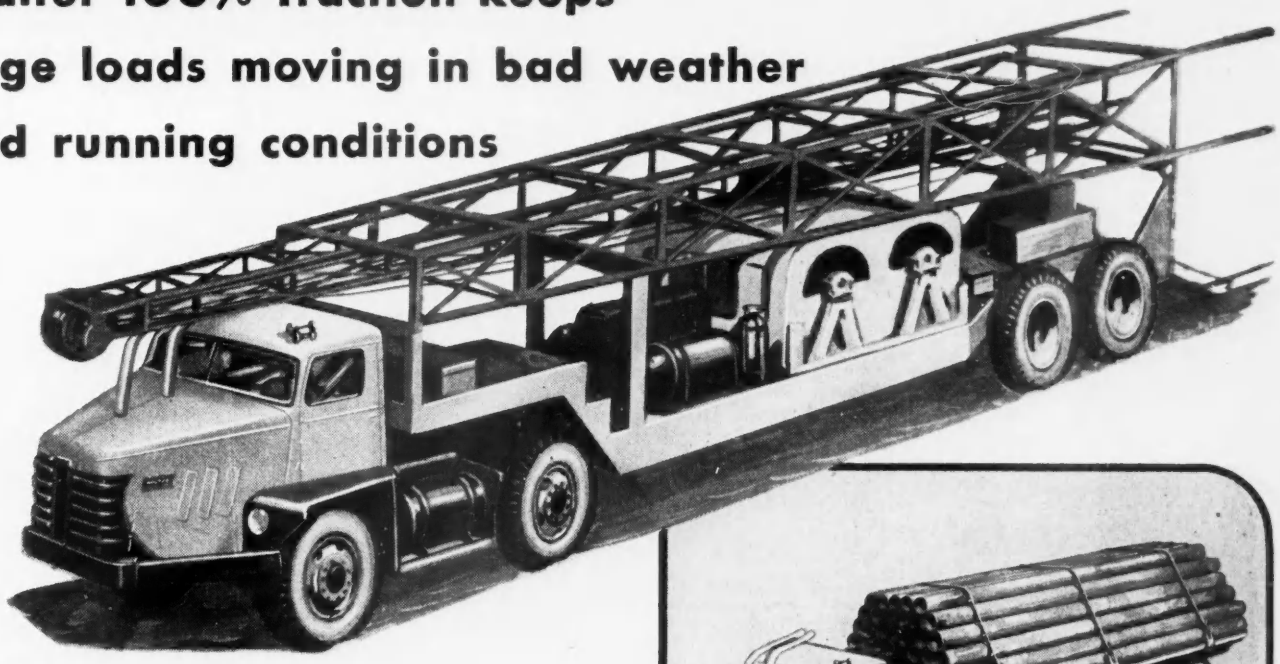

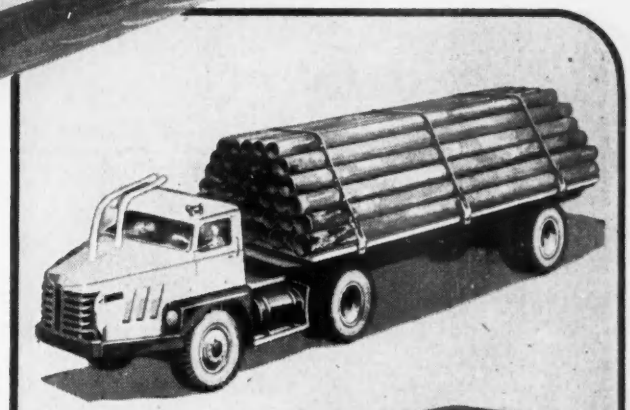

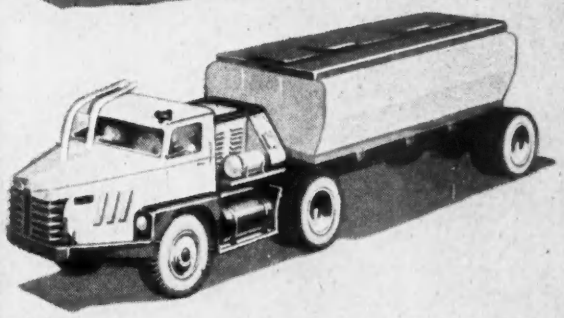

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hole at new Bivens field; new pay discovery at Bayou des Allemands given potential.

**Cameron Parish:** Production in the Northeast Mud Lake field has been confirmed by Magnolia Petroleum Company's Vincent Estate 1, 18-14s-10w, approximately 3400 feet northeast of the Lutcher 1-C discovery. From perforations at 9539-51 feet and 9957-10,047 feet in a new producing sand, the well flowed gas and condensate with 4000 pounds pressure through ⅛-inch choke. Total depth is 10,950 feet.

**Terrebonne Parish:** Kerr-McGee Oil Industries, Inc., has located 2 wildcats in the Gulf of Mexico. State 750-1 is on Block 28, approximately 7½ miles south of the shore line and 12 miles northwest of the old Coon Point prospect. State 754-1 is on Block 32 about 12 miles south of Point Au Fer field. Projected depths have not been announced, but company tools will be used.

**Beauregard Parish:** A second dry hole in The Atlantic Refining Company's newly discovered Bivens field is the Lutcher Moore Lumber Company 1-D, ¼ mile east of the company's Newport 1 discovery. The other dry hole is Lutcher Moore 1-C, ½ mile north of Newport 1. Atlantic has located Newport Industries 2 as a new test for the area. It is 1000 feet west and a little north of the discovery. Newport Industries 1 was completed in June from perforations at 7272-78 feet in the Cockfield. On potential the well flowed 113 barrels of 41.1-gravity oil daily through 6/64-inch choke.

**Lafourche Parish:** At Bayou des Allemands field Amerada Petroleum Corporation's C. E. Gheens 13, new sand discovery, has been given potential. The well gauged 195 barrels of 33-gravity oil daily through ⅛-inch choke with 1250 pounds flowing pressure on the tubing. Total depth is 8897 feet with casing perforated at 8408-12 feet for completion.

## • North Louisiana

### *Union Parish Producing Area Is Opened and Confirmed*

Union Parish discovery made and confirmed; Ora field gets best oiler to date; deep pay test at Ashland commands attention.

**Union Parish:** A producing area has been opened by R. T. Sellars and Wilson Ewing Company's P. J. Tucker 1, C NW NW NW 3-21n-1w. The area, designated as South Ora, is 1½ miles south and ½ mile west of Ora field. The well was completed flowing 90 barrels per day through 10/64-inch choke on tubing from 72 perforations at 2141-50 feet opposite the Nacatoch sand. Hole was bottomed at 2565 feet and string of 5½-inch casing was cemented at 2193 feet. Cores disclosed 25 feet of saturation from 2140-67 feet.

Same operator's P. J. Tucker 2, C SW NW NW 3-21n-1w, confirmation test in the new area, was completed through perforations at 2160-67 feet for a flow potential of 163 barrels per day through ¼-inch choke on tubing. Total depth is 2202 feet.

In the Ora field, Shell Oil Company has completed the largest initial gauge well to date. Frost Lumber Company A-11, in 23-22n-1w, came in flowing 198 barrels of oil per day through perforations at 2138-46 feet from the Nacatoch. Gravity of 34.2 degrees on this test is considered very important as normal gravity from other wells figures about 28 degrees.

**Natchitoches Parish:** The A. R. Johnson et al 1, The California Company's test in the Ashland field, was being closely watched by other operators pending release of information on reports of 50 feet of saturation in the Detro zone of the Eagleford formation. The hole was taken to a total depth of 5379 feet in the upper Rodessa and tested salt water in a drill-stem test at 5269-300 feet, and was plugged back to 3941 feet after an electrical survey. Operators were waiting for cement to set on casing at 3900 feet.

## • Arkansas

### *Spirit Lake Field Given Two More Good Producers*

Two good producers for Spirit Lake; wildcats drill with no shows.

**Lafayette County:** Flowing 164 barrels of 31-gravity oil per day through 3/32-inch choke on tubing, Magnolia Petroleum Company completed the second Paluxy sand well in the expanding Spirit Lake field. The well is Moore Heirs 7, SE SE NE 14-16s-25w, and was producing through 24 perforations at 3558, 66 feet.

Another completed oiler in the Spirit Lake field is Austin Stewart, H. G. Lewis and Crow Production Company's H. Moore Estate A-3, C NW SE NW 13-16s-25w. It flowed 120 barrels per 24 hours through 11/64-inch choke on tubing with tubing pressure 350 pounds, and was producing through 192 perforations at 4108-58 feet.

Barnsdall Oil Company and Spartan Drilling Company were drilling at 2647 feet in Bodcaw Oil Company 1, C SE SW 8-18s-23w, wildcat 2 miles south of McKamie field.

**Arkansas County:** D. J. Flesh et al were drilling below 3460 feet toward contract depth of 3500 feet without shows at Florence L. Rosencrantz 1, C NE SE SE 2-3s-6w, wildcat 4 miles southwest of Stuttgart. Top of the Nacatoch was logged at 3035 feet.

**Ashley County:** McAlester Fuel Company was drilling at 2640 feet in its wildcat, Crossett Lumber Company E-1, C SE SE 1-17s-7w, 2 miles north and 2 miles east of Hamburg. Chicago Corporation and Southern Production Company are drilling below 9⅝-inch surface casing cemented at 401 feet in M. R. Morris 1, C NE NE 31-18s-4w, wildcat 1 mile west and 2 miles south of Parkdale.

**Little River County:** Frank and George Frankel were making hole at Pearl Witherspoon 1, C SE NW SE 21-12s-30w, after a delay due to shortage of water. It is scheduled for 4700 feet.

**Miller County:** Big Chief Drilling Company and Glasscock Drilling Company were proceeding at 5507 in shale below Anhydrite with hope of cutting a fault to find production in Alziena N. Froid 1, C NW SE NW 29-17s-27w. By samples the base of Annona was hit at 2766 and Massive Anhydrite topped at 5253 feet.


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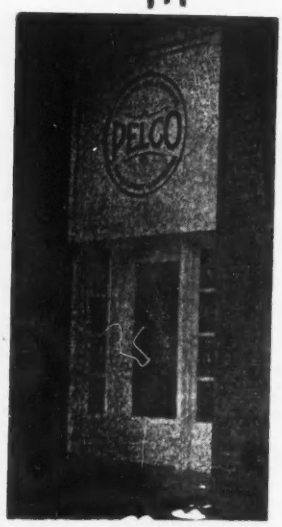


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## • Mississippi

### *Eutaw Wildcat, Jones County, Shuts Down After Tests*

Eutaw prospect, Jones County, shuts down for orders after discouraging tests; more shows developed below 13,000 feet in Gulf wildcat; Soso field outpost try reaches pay zone.

**Jones County:** Union Sulphur Company's Fall Estate 1, NW SW NW 8-9n-10w, Eutaw prospect 2 miles southeast of Sanderville, is shut down for orders after discouraging tests. With City Bank zone of the Eutaw topped at 5410 feet, cores in the vicinity of 5418 feet recovered 1 foot of saturated sand and 2½ feet of shaly sand with slight stain and salt taste.

Two miles northwest, Union's Parker 1, C SE NE 31-10n-10w, was running pump tests in efforts to establish commercial production. Gulf Refining Company's W. W. Jackson 1, 26-10n-13w, flank test of the Soso field, was coring in gray shale at 6640 feet. Cores at 6460-70 feet recovered shale and sand with faint gas odor and salty taste, while cores at 6460-80 feet developed no shows.

Gulf's L. L. Majors 1, SE NE 29-6n-11w, wildcat 11 miles southeast of Ellisville, has developed several additional shows in the Lower Cretaceous below 13,000 feet. Cores at 13,054-59 feet showed shale and sand with slight odor and stain. Cores at 13,075-83 feet developed shale and 6 feet of light brown oil sand. Driller is now below 13,098 feet in gray sandy shale.

**Jasper County:** Danciger Oil & Refining Company's C. J. Simmons 1, NE NE 36-1n-12e, which is heading below present productive levels in the Heidelberg field, is below 8000 feet in red and gray shale with no shows noted below the Eutaw. Union Producing Company's Massey Unit 1, C SE NW 28-10n-13w, western outpost of the Soso field, is preparing to run production tests after reaching the potential productive zone at 6669 feet. Several encouraging shows of gas and condensate have been noted. Gulf is building roads for A. E. Welborn 1, SE NW SW 19-10n-12w, 4 miles west of Moss and approximately 5 miles north of Soso. The test will drive for the Eutaw-Tuscaloosa zones.

**Warren County:** Amerada Petroleum Corporation's State 1, C NW NE 16-18n-2e, which was drilling on the flanks of the Eagle Bend Dome, has been abandoned at a total depth of 4425 feet with few encouraging shows. This was the second test of the area and was drilled as a result of findings in the company's Dabney-Bonelli, SW SW 9-18n-2e, which was abandoned several weeks ago in salt, but which logged sufficient shows in the Wilcox to warrant further exploration.

#### Alabama

The Carter Oil Company's Abston 1, C NE NE NW 3-10n-3w, in the East Gilbertown field, Choctaw County, has been completed successfully with an initial production of 119 barrels of oil per day. Casing was perforated at 3277-82 feet to establish production.

**Crenshaw County:** A. R. Temple's W. T. Smith Lumber Company 1, 26-8n-16e, wildcat in the southern part of the state, is drilling below 976 feet. The well probably will be driven below 4000 feet.

Amerada Petroleum Corporation's D. H. Wright 1, NW SW 8-15s-10w, wildcat 13 miles northeast of Fayette, is drilling below 3310 feet with no shows indicated.

#### Florida

Humble Oil & Refining Company's Tuscan Corporation, 35-43s-40e, Palm Beach County, deep wildcat 16 miles west of West Palm Beach, has been abandoned at a total depth of 13,325 feet after running electrical log. No shows of commercial importance were noted.

### *Rangely Oil Offered*

The Geological Survey will open bids August 7 for the sale of approximately 75,000 barrels a month of royalty oil from the Rangely field, Colo. The oil is being offered in three lots so that owners of small refineries with insufficient crude supplies may bid in accordance with the needs of their refineries.

## • Illinois Basin

### *Webster County, Kentucky, Discovery Is Indicated*

Discovery indicated in Webster County, Kentucky; Vandenburgh County, Indiana, wildcat makes oil on test; pumper on production in vicinity of North Maud pool, Illinois.

#### Kentucky

George Engle's Dixon 1, 2-L-24, near the town of Slaughters, Webster


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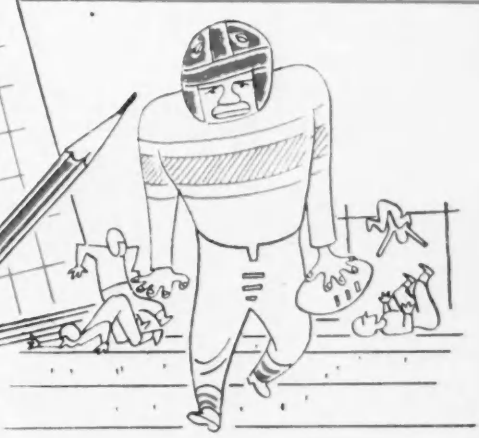

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County; and 10 miles from production, was showing for a discovery at 2540-60 feet. During a drill-stem test, the well made gas in 5 minutes and began flowing oil in 86 minutes without a trace of water.

**Henderson County:** Mitchell and Thorne's Kellin 1, 17-P-21, outpost test of the Hitesville pool, has casing set to test McClosky lime breaks at 2632-36 and 2648-52 feet after a drill-stem test showed gas in 24 minutes, 510 feet of oil, and 720 feet of oil-cut mud without water. Seven-inch pipe was set at 2668 feet.

**Laurel County:** The Pure Oil Company and Stanolind Oil & Gas Company's McKnight 1, 7-H-67, rank wildcat, was preparing to pump test Knox dolomite at 3477-85, 3500-05 and 3530-40 feet. The well had a maximum fill up of 3390 feet of oil and flowed 35 barrels of oil by heads in 1 hour. The well is 2 miles southwest of the same operators' Hammons 1, which had shows in the Knox dolomite and was shut down after preliminary tests.

### Indiana

O'Neall and Buchmann's Wassman 1, NE SW SW 6-5s-11w, 4 miles north of production in the Vienna pool, Vanderburgh County, has set pipe at 2286 feet for test of Cypress sand at 2286-301 feet. During a 1-hour drill stem test the well made 30 feet of oil, 30 feet of muddy oil, and 30 feet of oil-cut mud.

### Illinois

Calvert and Willis' Garwood 1, NW NW SW 16-1s-13w, Wabash County, 1½ miles southeast of the North Maud pool, swabbed 4 barrels of oil per hour after a 120-quart shot in Bethel sand at 2585-610 feet. Operator was placing well on pump.

Puritan Drilling Company's Skeleton 1, SE NE SE 10-1s-13w, wildcat, was drilling below surface casing.

**Shelby County:** Paul Doran's Manning 1, NE NW SW 14-11n-4e, 9 miles northwest of the Stewardson pool and a mile northeast of the 1-well Shelbyville pool, set pipe and was ready to test Aux Vases sand at 1866-80 and 1880-93 feet after a drill-stem test showed 700 feet of oil-cut mud. Total depth of hole is 2084 feet.

**Edwards County:** J. J. Lynn's Messman 1, NW NW SW 9-2s-14w, 2 miles east of the Albion pool, swabbed 2 barrels of oil per hour from Aux Vases sand after a 185-quart shot in pay at 2950-70 feet. Bethel sand at 2827-37 feet also will be tested through casing.

**Clay County:** H. Robinson's Kneff 1, SE SW SE 16-3n-7e, flowed 1012 barrels of oil in 27 hours natural after plug was drilled for McClosky lime test at 2958-64 feet.

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## • Michigan

### Wildcat Southeast of Austin Field, Mecosta County, Quits

**Mecosta County:** The Ohio Oil Company has abandoned Thurkow 1, NW NW NE 23-14n-8w, wildcat southeast of the Austin gas field, after plugging back from 3701 to a Traverse oil, gas and water show at 3101-03 feet. Efforts to plug off water were unsuccessful.

**Newaygo County:** Leonard Oil, Inc.'s Church 2, SW SW SE 2-12n-13w, ½ mile northeast extension bid to the Kimball Lake field, carried oil and water in the top of the Traverse objective at 2300 feet. Testing operations were in progress with commercial status a question.

**Crawford County:** The Pure Oil Company's State-A, W½ SW NW 17-25n-4w, wildcat 6 miles northeast of East Norwich field, pumped and flowed at a rate of 75 to 100 barrels oil per day after a second acid treatment. First returns showed from 4 to 8 percent water cut. The wildcat is producing from the Richfield section, bottomed at 4410 feet.

## • Ohio

### Symmes Township Test Taps Oil Flow in Niagara Lime

Oil showing in Symmes; Frazier extended north; large gas well in Salt Creek; Hemlock Grove extended west.

**Lawrence County:** Ohio Fuel Gas Companys C. W. Moulton 2, NW NE 13 Decatur township, found oil in the top of the Niagara lime while drilling for Clinton gas along the west edge of the Symmes pool. Top of the lime was reached at 2112 feet and at 2119 feet oil flowed over the mast with an estimated 400,000 cubic feet of gas. After flowing for three days, the oil declined and water came in. The well was drilled 2 feet deeper and an attempt was being made to exhaust the water.

**Muskingum County:** A ½-mile north extension to the Frazier pool was com-

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pleted by Salem Petroleum Producers on the Charles W. Tipton tract, SW SW 6 Brush Creek township. Gas in the Clinton sand at 3865-916 feet gauged 500,000 cubic feet natural and after a 30-quart shot was shut in at 1,250,000 cubic feet.

In the salt Creek field, Wassom Company's Mary Burkhart 3, NW NE 21, was completed with a natural flow of 2 million cubic feet of gas and a rock pressure of 1200 pounds. Clinton sand was reached at 4058 feet and paid at 4099-102 feet.

**Meighs County:** H. B. Walker's Nelson-Smith 3, NW NW 2 Bedford township, assures good production in practically all of the NW ¼ Sect. 2. Berea sand at 1596-1617 feet was shot and made 50 barrels in 24 hours.

## • California

### *Outcome of Ten Section Field Deep Test to Be Known Soon*

Outcome of Shell Oil Company's 14,000-foot test in Ten Section field to be known soon; wildcatting spurts in Kern County; second completion in Northeast Coalinga extension confirms importance of outpost discovery; shallow sand production in Chico gas field extended northeast.

**Kern County:** Outcome of Shell Oil Company's deep Vedder test in the Ten Section field should be known within a few days as the company is running tubing to swab for production. Three intervals, between 13,366 feet and bottom at 14,000 feet, were being tested through perforations. If the tests are a success the well will be the deepest commercial producer in California. Present production here is from the Stevens sand. Shell controls the entire field.

A spurt in wildcat locations occurred with 9 exploratory projects planned for this county alone. Of principal interest was the announcement by American Oil Corporation, a new company headed by William Helm of Fresno, that it will drill a test to the Santa Margarita 2 miles northwest of Mountain View field on the Kennedy property, 9-30s-28e.

Three miles south of Pacific Western Oil Corporation's duster, National Royalties 1, deepest well ever drilled in California, L. M. Lockhart will drill a wildcat in 20-26s-22e. This location is also about 1 mile west of Richfield Oil Corporation's Kerwin 1, abandoned in 1929 at 5210 feet after encountering showings at 4290-460 and 3665-750 feet.

L. C. Gould and R. Steele are preparing to drill K.C.L. 1, extension test in the Kern River area, 8-29s-28e.

Western Gulf Oil Company has staked B. & M.-U. S. 1, 3 miles southwest of the Santiago field in 30-11n-23w.

Seven miles east of McFarland, in 19-26s-27e, Universal Consolidated Oil Company has spudded Marquis 1.

Deepest active wildcat in California is Western Gulf's Southern Pacific 1, 10 miles south of Bakersfield in 25-12n-20w, which has reached 15,100 feet.

**Fresno County:** Sharples Oil Corporation, which extended the Northeast Coalinga field 1 mile north last spring on its first wildcat try in California, has brought in its second well in the area. Hyde 2, about 880 feet north of its Hyde 1 discovery, was flowing 196 barrels of 25.8-gravity clean oil through an 8/64-inch choke. Gas-oil ratio is 400/1. This is a much better well than the discovery, which had a prolonged water problem.

As an indication of the trend of production in the area, Standard Oil Company of California has abandoned Mitchem 58-12A in 12-19s-15e, 1 mile southwest of the Sharples Hyde 1 discovery. On the other hand, Standard's 7B-35, ½ mile southeast of Sharples' Hyde 1, has been brought in flowing 302 barrels through a 12/64-inch choke.

**Butte County:** Standard of California has extended shallow zone production in the Chico gas field to the northeast by the completion of Wahl 1 in 32-21n-1e. The well flowed 11,620,000 cubic feet through ⅞-inch choke before being shut in. Location is about 1½ miles northeast of the company's Donahoe Fee 1 discovery. Total depth is 2326 feet. The company has staked Donahoe Fee 2 about the same distance south of Donahoe Fee 1.

**Orange County:** Morton & Sons will continue prospecting efforts in the Corona del Mar area and have located Irvine 56-1 in 24-6s-10w. This is about 1 mile north of Irvine 55-1, drilled to 9427 feet and abandoned last June, with no showings encountered.

In the Santa Ana Canyon area, Landess Oil Company plans to drill a wildcat in 31-3s-8w about ¼ mile north of Wilcox 1, abandoned by Rubicon Oil Company on June 21 at 6325 feet.

## • Rocky Mountain Area

### *Seven Mile Dome, Wyoming, Wildcat to Test Morrison*

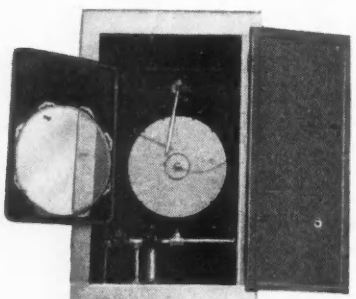
Seven Mile Dome, Wyoming, well plugs back to Morrison after finding water in Sundance; Oregon Trail Unit wildcat abandoned; Badger Basin field test coring below 11,090; Worland field extension try to test Embar.

#### Wyoming

The California Company-Phillips Petroleum Company's Christiana 1, wildcat in NE NE SE 8-17n-77w, on Seven Mile Dome, northwest of Laramie, Albany County, has been drilled to 6776 feet, total depth, in the Sundance. Sundance was encountered lower than expected and carried water. The well has been plugged back and perforated to test shows in the Morrison. The best probable producing zone is Muddy, topped at 5820 feet, which made 940 feet of clean oil in 30 minutes on drill-stem test, and this zone is believed commercial.

**Fremont County:** Sinclair Wyoming Oil Company is abandoning its wildcat on the Oregon Trail Unit, 45 miles north of Rock Springs, near the Continental Divide. The well is Unit 1, SW NE NW 24-27n-101w, and total depth was only 1858 feet. The well was projected to Cretaceous sands below 7000 feet, but at the present depth costs were in excess of $100,000 because the entire footage was through glacial drift and fill. More than 100 bits were necessary to drill the 1850 feet, and the drillers averaged only 35 feet per day. No announcement has been made by Sinclair of another test on the block. Location was on seismic work by Sinclair in the past 2 years.

**Park County:** General Petroleum Cor-

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poration is coring below 11,090 feet at its deep test of the Badger Basin field. Badura 2, C NE NW 7-57n-101w, topped Tensleep at 10,023 feet and no report has been made by the operator of shows in that formation. This is the first test below Sundance on this structure, which has produced oil from the Frontier sands since its discovery in 1931.

**Sweetwater County:** The third test for the Table Rock field has been completed by The Texas Company at Unit 3, CEL NW SE 2-18n-98w. The well was drilled to 3950 feet and plugged back to 3876 feet, where it made 5½ million cubic feet of gas from a sand in the Wasatch (Tertiary). The well extends the productive area of the field 1 mile southwest. Texas' discovery was drilled last year and completed in the same sand for an estimated 7 million cubic feet of gas, and a second test, 1 mile northeast, was a dry hole. The field has not been produced as there is no gas pipe line within 40 miles.

**Washakie County:** The Pure Oil Company's sixth unit well in the Worland field, at NE NE NW 19-48n-92w, topped the Embar formation at 10,260 feet, more than 280 feet lower than the highest structural well in the field. The well is drilling below 10,355 feet and will be tested soon. If productive the well will extend the limits of the field 1 mile southwest. Operator is now producing 1000 barrels daily of 42-gravity oil from 3 Embar wells in the field, and another well is approaching the sand.

**Weston County:** Morton Oil Company's Sedgewick 1, C NE NE 17-44n-63w, which recently extended the productive limits of the Mush Creek field 1½ miles west, has been deepened another 5 feet and is now producing at the rate of 255 barrels of oil daily. Newcastle was topped at 4155 feet and the well is now at 4165 feet, total depth. Operator continued to test and probably will complete at present depth. This oil is 42 gravity and is marketed at local refineries at Newcastle, Wyo.

### Colorado

The Carter Oil Company is drilling below 8976 feet at its North Craig wildcat Unit 1, C SE SE 30-8n-90w, Moffat County, after running electrical log at 8942 feet. Cores from 8771-942 feet showed sandy shale. This well had a show of oil and recovered a maximum of 240 feet of oil and mud on drill-stem test at 7829-48 feet 2 months ago.

At East Powder Wash Cities Service Oil Company and Transcal have run casing preparatory to perforating and testing at Government 1, SE SE NW 27-12n-96w. The well was drilled to 6010 feet, total depth, and 7-inch casing run to 5800. The entire footage is in Wasatch (Tertiary) formation and sands which showed some saturation on drilling will be tested. Most promising zone encountered, as shown by electrical log, was at 3747-813 feet.

**Rio Blanco County:** Top of the Dakota has been logged at 5368 feet at General Petroleum Corporation's Unit 1, C NE SW 24-2s-103w, West Douglas Creek. On Drill-stem test at 5378-401 feet the well made only 50 feet of mud in 25 minutes, with no shows of oil or gas. Dakota produces gas in the Douglas Creek discovery well drilled 2 years ago. The West Douglas Creek well is scheduled to test Weber formation at around 8000 feet.


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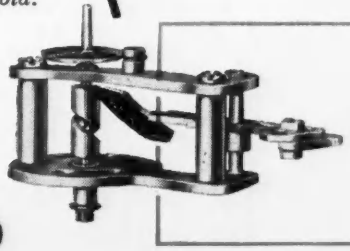

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# EXPLORATORY FAILURES

### ARKANSAS WILDCAT

**Calhoun County:** Jack Carnes' Gaughan 1, C NE SE 34-13s-16w, 5 mi w of Locust bayou, abnd 8-12-47 at 3440.

### CALIFORNIA WILDCATS

**Fresno County:** Standard Oil Co.'s Mitchem 58-12, 12-19s-15e, N. E. Coalinga area, abnd 8-10-47 at 4727.

**Kern County:** Louis H. Didier's 1, 10-31s-30e, Arvin area, abnd 8-12-47 at 910.

Independent Exploration Co.'s Cymric 21, 21-29s-21e, Cymric area, abnd 8-9-47 at 5256.

Mar-Roo Syndicate's 44, 33-27s-19e, McDonald Anticline area, abnd 8-9-47 at 2368.

Standard Oil, Operator's U.O.N.P.R. 67-8G, 8-31s-24e, Elk Hills area, abnd 8-12-47 at 3553.

Victor Exploration Co.'s 1, 32-29s-22e, McKittrick area, abnd 8-12-47 at 5902.

### ILLINOIS WILDCATS

**Clay County:** C. E. Brehm's Bailey 1, se ne ne 14-4n-5e, abnd at 2744.

**Coles County:** Harold C. Sander's Childress 1-B, sw 30-13n-11e, abnd at 2325.

**Richland County:** J. L. Black's Osh 1, ne se se 18-2n-9e, abnd at 3074.

### INDIANA WILDCATS

**Gibson County:** C. R. Cullison's Kendle 1, nw nw sw 34-1s-10w, abnd at 2050.

..George Engle et al's Benson 1, ne ne se 34-2s-12w, abnd at 2611.

F. Beard's Nurrenbern 1, sw sw nw 30-2s-9w, abnd at 1654.

**Posey County:** Calvert & Willis' Bailey 1, sw sw sw 4-5s-13w, abnd at 3042.

Ashland & John Buchman's Schultz 1, nw se nw 28-6s-14w, abnd at 3042.

### KANSAS WILDCATS

**Barton County:** Barbara Oil & Beardmore's Zorn 1, sw nw sw 18-16s-12w, abnd at 3467.

**Butler County:** Rex & Morris' & Adair's Rice 1, se sw nw 4-26s-4e, abnd at 2560.

**Comanche County:** J. M. Huber's Ferrin 1, c nw ne 10-31s-17w, abnd at 5595.

**Cowley County:** H. H. Blair's Root 1, ne ne nw 31-30s-4e, abnd at 2944.

**Ford County:** Texas Co.'s Barngrover 1, sw nw ne 35-27s-24w, abnd at 6172.

**Graham County:** Anderson Prichard Oil Corp. et al's Buss 1-A, sw sw nw 13-9s-22w, abnd at 3904.

Skelly Oil Co.'s Andregg 1, nw nw sw 31-8s-21w, abnd at 3766.

**Marion County:** Hutchinson O & G Co.'s Stancel 1, sw sw nw 29-19s-4e, abnd at 2610.

**Meade County:** Helmerich & Payne's Adams 2, ese se 36-34s-30w, abnd at 6432.

**Rice County:** Doley Oil et al's Colle 1, se se se 34-20s-7w, abnd at 3391.

**Rooks County:** Atlantic's Ruzicka 1, ne ne sw 17-9s-18w, abnd at 3577.

Palmer Oil Co.'s Darland 1, nw ne nw 11-10s-17w, abnd at 3510.

Westgate-Greenland's Dartos 1, se se se 15-9s-19w, abnd at 3583.

**Saline County:** Lowell Drlg. et al's Maneval 1, sw sw sw 12-13s-2w, abnd at 3359.

**Sedgwick County:** J. P. Gaty's Nickel 1, se nw se 24-26s-2e, abnd at 3252.

**Stafford County:** Mouser & Western Exploration Co.'s Kasselman 1, se se nw 9-21s-11w, abnd at 3513.

**Sumner County:** El Dorado et al's Bothin 1, sw sw se 13-31s-2w, abnd at 3824.

### KENTUCKY WILDCAT

**Webster County:** Illey Browning et al's Warren 1, 18-N-23, abnd at 2767.

### NORTH LOUISIANA WILDCATS

**Bossier Parish:** M. A. Halsey's H. Skidmore B-1, c se se 11-16n-11w, abnd 7-31-47 at 5837.

**Desoto Parish:** Texas Co.'s La. Ld. & Inv. Co. 2, 2713 nl 380 el 10-12n-14w, core test, abnd 8-6-47 at 1564.

Texas Co.'s D. M. Bannerman 1, 3043 nl 481 wl 28-13n-14w, Grandcane Prospect core test, abnd 8-3-47 at 1560.

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Texas Co.'s J. B. Gamble 2, 123 sl 1969 wl 13-13n-15w, Grandcane Prospect core test, abnd 8-7-47 at 1670.

**Franklin Parish:** Murphy & Sun's J. E. Holt 4, 475 el 667 nl 21-16n-8e, 3 mi s Big Creek, S prod., abnd 8-4-47 at 4520.

**Madison Parish:** Victor P. Grage's W. R. Gilfoil 1, 650 sl 1312 wl 31-18n-13e, abnd 8-4-47 at 4303.

### NORTH LOUISIANA WILDCAT

**Richland Parish:** Geo. B. Franklin's Fee 2, 660 frl wl 460 fr sl se sw 28-18n-8e, abnd 8-12-47 at 3024.

### NORTH LOUISIANA NEW PAY TEST

**Bossier Parish-Bellevue:** Mayfield Drlg. Co.'s W. J. Cox-Stewart 1, 2157 fr el 519 fr nl, 24-19n-11w, abnd 8-13-47 at 5007.

### SOUTH LOUISIANA WILDCATS

**Beauregard Parish:** Atlantic's Lutcher-Moore Lmbr. Co. 1-D, 610 n 660 w of se cor 5-3s-8w, 4 mi e DeRidder twst, abnd 8-17-47 at 8970.

**Lafourche Parish:** Stanolind's State Lse 739-1, 8400 s of nl 660 e of wl of State Lse 739, Tr 884, abnd 8-12-47 at 13,129.

**Plaquemines Parish:** S. W. Richardson's Delacroix Corp. 2-B, 2322.84 n of wl 1351.36 w of el 4-16s-13e, abnd 8-10-47 at 11,286.

### MICHIGAN WILDCATS

**Allegan County:** C. W. Cook's Miller 1, se sw ne 11-3n-13w, abnd 8-13-47 at 1130.

**Clinton County:** J. E. Hood's Goodman 1, sw sw ne 28-7n-4w, Monroe 2880, abnd 8-10-47 at 2901.

**Lake County:** C. W. Weller's State 1, se sw se 16-20n-12w, Dundee 3159, abnd 8-15-47 at 3460.

**Mecosta County:** Michigan Con.'s Walkington 1, sw ne se 25-13n-7w, abnd 8-11-47 at 1331.

Ohio Oil Co.'s Thurkow 1, nw nw ne 19-14n-8w, abnd 8-14-47 at 3701.

**Ogemaw County:** J. O. Mutch's Donahas 1, se sw se 29-21n-4e, abnd 8-16-47 at 1821.

**Ottawa County:** Sohio's Baker 1, nw ne ne 22-5n-13w, Traverse 1846, abnd 8-13-47 at 1855.

Wilma Lyon's Dekker 1, sw sw sw 12-5n-16w, abnd 8-13-47 at 1788.

**Washtenaw County:** H. L. Heath's Merritt 1, nw se sw 1-1s-7e, abnd 8-14-47 at 3220.

### OKLAHOMA WILDCATS

**Cotton County:** Bridwell Oil's Scruggs 1, 220s 200w of n¼ cor 31-3s-10w, abnd at 1467.

Amerada's Gina-quoe-tone 1, ne ne sw 26-3s-12w, abnd at 2210.

C. A. Johnson's Eason 1, nw ne ne 17-5s-12w, abnd at 1852.

**Creek County:** Mid-Continent Pet. Corp.'s Diehl's 1, nw nw ne 33-15n-7e, abnd at 4250.

**Noble County:** Clark & Cowden's Earl 1, c nw nw 28-22n-2w, abnd at 5173.

**Oklahoma County:** Double R Drlg. Co.'s Hudson 1, nw nw nw 31-14n-1e, abnd at 5840.

**Payne County:** Fleet & Roadhouse's State 1, se se nw 16-18n-3e, abnd at 4110.

**Pontotoc County:** Sohio's McCoy 1, ne se nw 13-4n-7e, abnd at 4370.

**Pottawatomie County:** J. F. Smith's Stice 1, nw nw nw 17-8n-2e, abnd at 5763.

**Pushmataha County:** Joe Marshall's Gill 1, sw nw sw 20-4s-18e, abnd at 343.

**Stephens County:** Sohio's Wade 1, sw nw se 10-1n-4w, abnd at 4305.

### WEST TEXAS WILDCAT

**Lubbock County:** Stanolind's Flinn 1, c se se L&SV Ry. 10, blk D, elev 3315, anhydrite 1600, San Andres 3180, Glorietta 4560, Tubb 5850, Wolfcamp 8230, abnd 8-4-47 at 8500.

### WEST CENTRAL TEXAS WILDCATS

**Concho County:** Southern Minerals Corp.'s Henderson 1, 467 out sec H&TC 63, blk 8, elev 2325, Strawn 3335, Bend 3795, Ellenburger 4050, abnd 8-5-47 at 4093.

**Reagan County:** Humble's Sawyer Cattle Co. 1-D, c nw nw T&P Ry. 78, blk 1, elev 2449, Ellenburger 9735, abnd 8-14-47 at 9810.

### NORTH TEXAS WILDCATS

**Archer County:** E. B. Clark et al's Lyles 2, 2075 snl 1725 ewl sect. 7, Hooper & Wade sur A-234, elev 1153, Bend 4872, Mississippi 5066, Ellenburger 5208, abnd 8-16-47 at 5265.

**Jack County:** J. H. Johnson et al's Wright 2, 617 nsl 270 wel se of ne Z. S. Brooks sur, abnd 7-30-47 at 854.

**Montague County:** B. F. Phillips et al's Sherrill 1, 330 fr sw se lines blk 4, Calhoun CSL sur, abnd 8-10-47 at 3507.

### NORTH CENTRAL TEXAS WILDCATS

**Brown County:** Willis L. Cox et al's Sanderson 1, 1050 wel 450 nsl H&TC Ry. 13, abnd 8-12-47 at 990.

**Callahan County:** Bailey & Stebinger's Ken-

nard 2, 350 snl 1593 ewl E.T. Ry. 10, abnd 8-8-47 at 2035.

**Haskell County:** Tom D. Humphrey's Burnett 3, 2364 nsl 990 wel J. Campbell sur 58, A-91, Canyon reef 2771, abnd 8-11-47 at 2775.

**Jones County:** J. P. Byram et al's Alexander 1, 330 out swc T&P 2, blk 14, elev 1561, abnd 8-10-47 at 1883.

**Shackelford County:** Schkade Bros.-Gray & Wood's Lee 1, 750 ewl 200 snl of s½ nw T&P Ry. 23, blk 11, abnd 7-22-47 at 1205.

**Stephens County:** G. E. Kadane & Sons' Cochran 1, 1263 snl 1500 wel sect. 2962, TE&L Co. sur, abnd 8-11-47 at 4254.

### NORTH CENTRAL TEXAS NEW PAY TESTS

**Jones County—Wimberly:** West Central Drlg. Co. et al's Wimberly 7-A, 330 out nec nw¼ labor 87, lge 126, DeWitt CSL, elev 1752, Dothan 1785 to 1815, Saddle Creek 2100 to 2120, Gunsight 2440, Palo Pinto 2698, Strawn 3910, Ellenburger 5155, Hickory sd 5585 to 5647, td, pb to 2719 and comp 7-15-47 as dual producer fr regular pays.

**Throckmorton County:** Tom F. Hunter's Matthews 1, 660 out sec sect. 60, Comanche Indian Res., elev 1363, Palo Pinto 2826, Bend 4327, Mississippi 4775, abnd 8-16-47 at 4838.

### EAST CENTRAL TEXAS WILDCAT

**Freestone County:** A. F. Richardson et al's Sessions 1, 4200 fr nel 6250 fr sel of S. A. Sweet sur, elev 354, abnd 8-12-47 at 3655.

**Hopkins County:** Tom G. Shaw, Tr's Lee & Thomas 1, 975 ewl 1600 nsl of 189¾-ac tr and John Blocker sur, elev 562, Pecan 1698, Austin 2895-3342, Woodbine 3906, Lwr Cretaceous 4685, Paluxy 5652, abnd 8-10-47 at 5862.

### TEXAS PANHANDLE WILDCATS

**Floyd County:** Humble's Meriwether 1, c nw nw E.L. & RR. 31, blk D-3, elev 3173, black shale 5930, lime 7480, abnd 8-12-47 at 7745.

**Hale County:** Barnsdall Oil Co.'s Camp 1, c sw nw E.L. & RR. 13, blk D-8, elev 3365, San Andres 2890, Glorietta 4220, dolomite 4460, Tubb (Clear Fork) 5420, abnd 8-12-47 at 8210.

**Lamb County:** Sunray Oil Corp.'s Gipson 1, 660 out swc labor 18, lge 685, State Capitol Lds, elev 3515, anhydrite 1764, San Andres 3200, Glorietta 4600, Clear Fork 5230, abnd 8-17-47 at 6508.

### SOUTH CENTRAL TEXAS WILDCATS

**Caldwell County:** F. C. Cooper & National Well Servicing Co.'s N. B. Langley 1, 6000 fr nel 470 fr sel of Michael Gillan sur A-10, Edwards lime 2198, abnd 8-8-47 at 2257.

Georgia-Tex Oil Co.'s Austin Nix Est. 1, 2000 fr most w'ly nwl 330 fr swl of 256-ac lse in Gidon Pace sur A-230, Austin chalk 1640, Edwards lime 1990, abnd 7-22-47 at 2100.

**Zavala County:** Jergins Oil Co.'s Ike T. Pryor 1, 4300 fr nwl 6600 fr nel of 5000-ac lse in Antonio Aguirre Gr A-1, Base Wilcox 307, base chalk 2144, Buda lime 2377, Del Rio lime 2480, Georgetown lime 2596, abnd 8-12-47 at 3546.

### MIDDLE TEXAS COAST WILDCATS

**Calhoun County:** Texas Co.'s State Tr 107-1, 330 fr nl 1650 fr wl of 640-ac Tr 107 in Matagorda Bay, abnd 8-14-47 at 5705.

**Jackson County:** Monday Oil Co. et al's Henry P. Hill 1, 8200 fr el 5300 fr sl of S. C. A. Rogers 1 Lge Gr, abnd 8-12-47 at 6000.

**Live Oak County:** Humble's J. W. Patterson 1, 330 fr ne&nwl's of Jas. Latham sur 5, 6269-ac lse, abnd 8-11-47 at 5020.

L. M. Lockhart's Josephine Peck 1, 330 fr nl 2300 fr wl of Maria Bridget Kivlin Gr A-21, abnd 8-10-47 at 5403.

H. R. Smith & Gulf Oil's J. M. Ponder 1, 350 w of el and on sl of W. H. Rogers sur 243, abnd 8-11-47 at 4400.

### SOUTHWEST TEXAS-LOWER COAST WILDCATS

**Starr County:** Baldridge & King et al's Mrs. O. H. Davenport-State 1, CCSD&RGNG sur 532, 2½ mi ese Rincon fld, abnd 8-9-47 at 5135.

C. G. Glasscock & Coastal Ref. Inc.'s V. Sanchez 1, F. Gonzales Porcion 75, 4 mi w of El Sauz, abnd 7-29-47 at 1300.

### SOUTHWEST TEXAS-LOWER COAST NEW PAY TEST

**Duval County-Seven Sisters:** Santa Clara Oil Co. et al's Jas. F. Welder Hrs. 1-D, 320-ac "D" lse Samuel Alexander sur 102, abnd 8-7-47 at 7875.

### SOUTHWEST TEXAS-LOWER COAST OUTPOST

**Brooks County-Pita:** Humble's D. J. Sullivan 10-B, 9540 fr wl 1980 fr sl of San Antonio de Encinal Gr, abnd 8-10-47 at 9752.

### UPPER TEXAS COAST WILDCATS

**Jasper County:** Standard Oil Co. of Tex's Kirby Lmbr. Co. 1, Gist Prospect, 1320 fr el 1980 fr nl sect. 11, T&NO sur A-488, abnd 8-9-47 at 8008.

**Lee County:** United North & South Dev. Co.'s Wm. Baine Est. 1, 330 fr sl 470 fr wl 80-ac lse, 2500 fr wl 5050 fr sl Ira Clemons sur A-58, abnd 8-7-47 at 6434.

**Tyler County:** Grubb & Hawkins' Kirby Lmbr. Co. 1, 790 w of w bank of Neches River 1653.7 fr sl of sur, J. J. Pemberton Lge A-502, abnd 7-27-47 at 7500.

**Walker County:** Moran Oil Corp.'s D. R. Hardy 1, 1850 fr nwl 630 fr swl of 160-ac lse, Jno. Saddler sur, abnd 7-30-47 at 3805.

**Washington County:** Union Sulphur Co. Inc's Joe Kubeczka 1, Chapel Hill area, 184-ac lse, Wm. Munson sur A-90, 2¼ mi n of Chapel Hill twst, abnd 8-5-47 at 10,965.

**Wharton County:** Floyd L. Karsten's Mrs. M. G. Willis 1, South El Campo area, s½ nw¼ sect. 51, ET RR. sur, abnd 8-9-47 at 7035.

Sam G. Harrison's M. A. Fraley et al 1, 3100 fr nwl 467 fr nel sect. 69, WC RR. sur A-369, abnd 8-6-47 at 5840.

## *Hearing Set to Carry Out Texas Leasing Legislation*

A public hearing to adopt a formula and procedure in carrying out the provisions of House Bill 17 has been scheduled for September 15-16 in Austin by the Texas School Land Board. The board is composed of Gov. Beauford Jester, Land Commissioner Bascom Giles and Attorney General Price Daniel.

In making the announcement, Giles said: "The board hopes to project and approve, with the aid of all persons interested, a set formula for the evaluation and extension of all leases now under the 25-year limitation clause, by which the companies may negotiate the extension of the leases as provided under the terms of the bill passed by the 50th Legislature. Formerly the state, under statutes enacted prior to proration, limited all such leases to 25 years. The board expects to receive much higher bonus bids in the future, since leases will be allowed to continue in force as long as production in paying quantities is maintained."

HB 17 becomes effective September 6 and instructs the School Land Board to determine the per acre charge for extending leases. The Legislature set a $2 minimum.


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**Jose Ovidio Martinez,** engineer for Langley y Cia., S.R.L., Buenos Aires, arrived in New York in August for a three-months business trip to visit the plants of equipment companies represented by the firm in Argentina. Before his return he also will visit the major oil fields of Texas and California.

J. O. Martinez

**Lieut. Col. Charles H. Andrus** of San Antonio was presented the Chinese Yun Hui medal in Yokohama in recognition of outstanding service. Colonel Andrus was a consulting petroleum engineer and independent oil operator before the war.

**Louis Franklin,** Houston geologist and drilling contractor, has returned after 15 months in Palestine, where he worked with Jordan Exploration Company.

**E. B. Orchard,** Houston, who formerly was new business supervisor for United Gas Corporation in the Houston division, has been named sales manager. Orchard has been with the corporation 15 years. In his new position he will supervise the division's domestic, commercial and industrial sales.

**E. R. Love** has been named vice president, general manager, and a director of Camay Drilling Company, Los Angeles. Love formerly was general superintendent of Camay Drilling and prior to that was a member of the drilling department of Tide Water Associated Oil Company. Camay has just completed Adams Oil Company's Morganti 3 in the Casmalia field, Santa Barbara County, California.

**Dr. John T. Sanford,** research geologist at Oklahoma City for Magnolia Petroleum Company, has resigned to join the faculty of Wayne University, Detroit, effective September 1.

**W. Schneeberger,** head of Shell Oil Company of Peru's geological staff, has been called from Peru for assignment elsewhere along with the remainder of the staff during a period in which Shell is apparently suspending exploratory work in the area.

**J. M. Clark** has resigned as district geologist for Tide Water Associated Oil Company to become an independent operator and consultant in Tulsa.

**James A. Upham** of Mt. Vernon was named president of the newly-formed Ohio Oil and Gas Association. The organization replaces the Ohio Penn Grade Oil Producers Association and the Independent Gas Producers Association of Ohio. Offices will be at 35 North Second Street, Newark, Ohio. **P. N. Faine** is secretary-treasurer.

**Barnard Rainey** has been employed as Rocky Mountain scout by The Pure Oil Company. His headquarters will be at Billings, Mont.

**Ward W. Clopton,** assistant district manager of the San Antonio district for United States Gas Pipe Line Company, has been named district manager to succeed **E. F. Humes,** retired. Clopton previously had served as district manager at Wichita Falls.

**Prince Saif Al Islam Abdulla** of the Arabian province of Yemen last week inspected oil fields around Oklahoma City and conferred with producers and engineers, after which he went to Texas to visit Phillips Petroleum Company plants at Amarillo, Borger and Phillips. The prince is in this country to obtain information as to American production methods because, he said, several American companies plan to conduct explorations in Yemen. The prince was met at the Oklahoma City airport by **Governor Roy J. Turner,** who accompanied him on a tour of the Oklahoma City pool.

**Arnold F. Parr** has moved from Tulsa, where he worked for the Oklahoma Natural Gas Company, to Caracas, where he is employed by the Pantepec Oil Company of Venezuela.

**Jay W. Turner** has been elected vice president of Wil-Tex Oil Corporation and the S.E.W. Oil Corporation, Corpus Christi. Turner, a native of Springfield, Mo., was graduated from Tulsa High School in 1926 and received his B.S. degree in accounting from Oklahoma A. & M. college in 1932. He joined the Lucey Products Corporation, in Tulsa, where he remained until 1940. He then entered the Dallas offices of Oil Well Supply Company, where he was division credit manager for six years. In 1946 he was transferred to the Houston offices of that concern. He joined the Wilson organization May 1.

Jay W. Turner

**Neil McDowell,** consulting geologist of Houston, has been in Washington for the past three weeks giving testimony on the gas reserves of the Whelan gas field, Harrison County, Texas. He is representing D. E. Whelan and R. J. Whelan and the Texas Eastern Transmission Corporation before the FPC.


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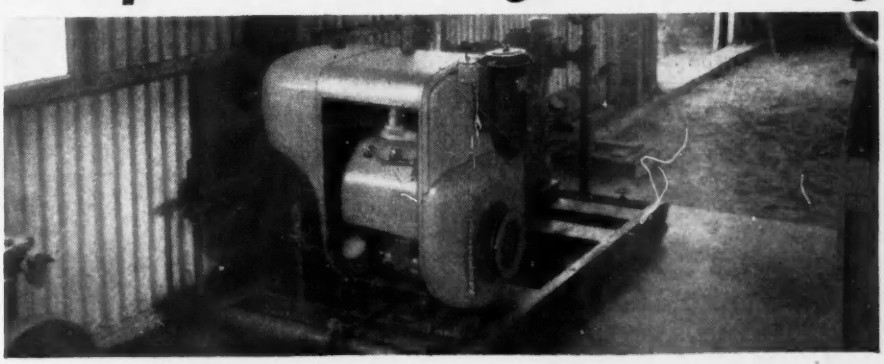

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**Harold S. Falk,** president of The Falk Corporation, was elected to the board of directors of Allis-Chalmers Manufacturing Company. Falk, whose firm manufactures reduction gears and steel castings and was a large producer of gear units for World War II Navy vessels, succeeds his uncle, the late **Herman Falk.** Herman Falk was a member of the board for 14 years, and was chairman of the board of The Falk Corporation at the time of his death early this year.

**Gregory L. Turner** has joined the staff of The Pure Oil Company at Tyler, Texas.

»

**Charles E. Kirschner** has left the U. S. Geological Survey, Washington, D. C., to join the Union Oil Company of California at Olympia, Wash.

»

**Carl V. Stehle, Jr.,** has left the Atlantic and Pacific Oil and Gas Company to join the Vaca Oil Exploration Co. and is located in Oxnard, Calif.


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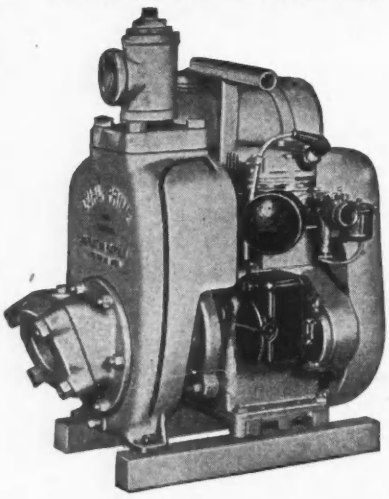

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**B. V. Brown** has been transferred to the New York City office of International Derrick and Equipment Company. He was formerly manager of purchasing and stock control in the IDECO supply stores at Dallas and has been with the company since 1943. Brown attended the University of Wichita and has been associated with oil field manufacturers and suppliers for 20 years in sales work and purchasing.

B. V. Brown

»

**Glyn Thomas** has joined the sales department of Pressed Steel Tank Company, maker of cylinders, drums, shapes and other metal products. He will help direct the export department while maintaining headquarters in the Milwaukee general office.

»

**John W. Emison,** vice president and treasurer of The Texas Pipe Line Company, has been elected a vice president of the Houston Control of the Controllers Institute of America. **Harry B. Drennan,** assistant controller of The Superior Oil Company, was named a director of the local group, as were **S. G. Loy,** assistant controller of Humble Pipe Line Company, and **Weldon M. Padgett,** assistant secretary of the Pan American Pipe line Company.

»

**Rene J. Bender,** who for 15 years was connected in an engineering capacity with Sinclair Refining Company, has become assistant to the president of Sinclair Petroleum Company and will leave shortly for Addis Ababa, Ethiopia, where he will represent his company. Bender was for ten years the editor of the *Sinclair Firebox* in Chicago. Upon his return from two years of service in the U. S. Navy overseas, he was attached to the home office of the company.

»

**H. S. Gibson,** general field manager for Anglo-Iranian Oil Company at Abadan, has been awarded the Redwood Medal by Britain's Institute of Petroleum for his unique work in the production of petroleum. The Redwood Medal, an award established in 1921 in honor of **Sir Boverton Redwood,** founder of the Institute, is given "as and when desirable, but not more than once each year, to a petroleum technologist of outstanding eminence, irrespective of nationality or membership in the Institute." Since the medal was established only seven previous awards have been made, the latest having been in 1938. Gibson joined Anglo-Iranian in 1922 as production engineer, was promoted to production superintendent in 1928, and to production manager two years later. The formal presentation will take place on September 26 at the first meeting of the 1947-48 session of the Institute of Petroleum.

**T. A. (Tom) Ramey** has been named sales manager of Unit Rig & Equipment Company of Tulsa. For the past 13 years Ramey has been connected with The National Supply Company.

»

**R. D. Copley** has been retired as Rocky Mountain assistant production superintendent of The California Company after 14 years with that division of the company.

»

**Laird A. Hanson** has been named supervisor of parts and service merchandising for International Harvester Company motor truck division. He replaces **M. D. Dean,** who has been appointed manager of the Wichita truck branch.

»

**Walter S. Reid,** a director of International Petroleum Company, and formerly his company's representative in Peru, has gone to Lima to keep in touch with anticipated petroleum legislation and disposition of the Sechura Desert contract. He was accompanied by **P. W. Lambright,** another International director, and **Carter Panill,** Standard Oil Company attorney.

»

**Roger G. DeLong** has been named manager and **W. B. Gibson,** sales manager of the hydraulic division of Twin Disc Clutch Company. DeLong has been serving as both acting manager and sales manager of the Rockford division. Gibson has been assistant district manager of the Eastern territory.

## Deaths

**Robert Reid,** former manager of the Aberdeen branch of Scottish Oils and Shell Mex, Ltd., died recently at his home in England. He had served during World War II on the British Petroleum Board in London, and with the armed services division of gasoline supply, having retired with the rank of major.

»

**David B. McCalmont,** 70, Franklin, Penn., oil operator, died August 12. He was formerly a member of the executive committee of the Pennsylvania Oil & Gas Men's Association.

»

**E. L. Martin,** 63, Oklahoma City oil man, died August 6 in Billings, Mont.

»

**Harry Fowle, Sr.,** pipe line superintendent for The Texas Company, died August 5 in Beaumont, Texas, of injuries suffered in an auto accident.

»

**Robert R. Ohlson,** geologist in Peru with Soncy-Vacuum Oil Company, was drowned with three Peruvian workmen in a "flash flood" on the Pisqui River, a branch of the Ucayali River. Ohlson, whose home was in Turner Valley, Alberta, Canada, went to Peru from Canada in April in connection with the company's exploration program.

**Basil Hudson,** 43, Midland, Texas, oil scout, was fatally injured August 18 when struck by a passing car near Kingman, Ariz., while checking the tires on his own car.

»

**William K. Page,** 62, president of Olean Petroleum Company, died August 6, at Bristow, Okla., from injuries sustained in an automobile accident near Salina, Kansas. He was active in Mid-Continent oil fields and had been president of Olean for 25 years.

**Frank D. Railly,** 41, president of Bennett Drilling Company, Tulsa, died August 8.

»

**Henry Grattan Flood,** 52, assistant manager of the marketing-engineering department, Shell Oil Company, Inc., New York, in charge of construction and maintenance, died July 31 in Albany, N. Y. Flood had been connected with Shell and associated companies since 1928, when he joined Asiatic Petroleum Company.


**Why do JENSENS PUMP MORE OIL FOR LESS MONEY?**

**In the first place Jensen Pumping units generally cost less because they are mass produced. Upkeep is less because of a rugged design backed by 27 years experience. Precision manufacture reduces friction, requires less power, makes operation smoother.**

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*Export Office:* **50 CHURCH STREET, NEW YORK CITY**

### Lucey Sets Up Pipe Exchange For Mid-Continent Operators

A Mid-Continent Pipe Exchange through which one oil operator's pipe can be traded for that of another operator has been established by the Dallas office of the Lucey Products Corporation. The exchange will be operated without profit in an effort to relieve what is considered a maldistribution of tubular stocks throughout the oil country.

Operators are encouraged to fill out a questionnaire which lists pipe they have on hand which is not surplus yet is not as essential as some other size, weight or grade they need. Such questionnaires are then sorted by Lucey, paired off as to locality wherever possible, and the respective operators are notified that they pipe they need is available and how to contact those owning it.

Trades involving very considerable footages have been reported by Lucey. Either new or used pipe is handled through the exchange.


No More PARAFFIN ACCUMULATION

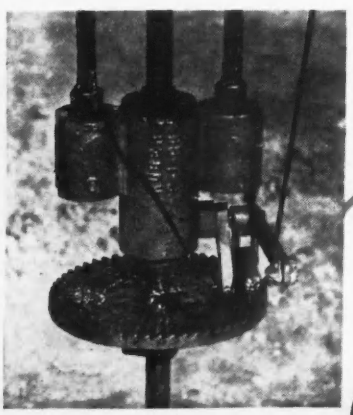
HUBER

PARAFFIN SCRAPERS

Imagine what you could save by eliminating the frequent and costly job of steaming out or "passing rods" to free your well of paraffin.

Huber Scrapers make a paraffin scraper out of your sucker rod string. These steel blades, shrink-welded to the rods, scrape the paraffin from the tubing as the string rotates and reciprocates. With the string rotated a fraction of a turn on each stroke, the scrapers keep the tubing wall free of any paraffin.

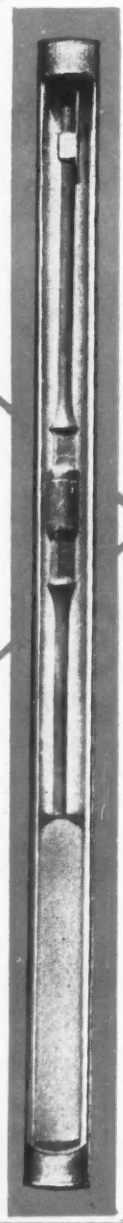
Operation of the Huber Scrapers is automatic and entirely mechanical. They require no service or attention. Install Huber Scrapers in your paraffin wells and eliminate the cost of paraffin removal.



AUTOMATIC ROD ROTATION

This rotating rod hanger is attached to the unit's or jack's head by conventional wire line bridle. Two ratchet levers engage the turntable, and by means of a flexible steel cable from the ratchet arm to the walking beam, the rods are rotated a fraction of a turn with every stroke of the pump.

ORDER FROM YOUR SUPPLY STORE



HUBER PARAFFIN SCRAPERS

J. M. HUBER CORPORATION

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### General Sales Manager Appointed By Roebling's Sons Company

To coordinate the recently-announced program of modernization and expansion of production facilities in the Woven Wire Fabrics Division, John A. Roebling's Sons Company, through its president, Charles R. Tyson, has announced the appointment of F. G. Hoyt as general manager.

F. G. Hoyt

Hoyt, who is experienced in the aggregate wire screen and allied fields, will be assisted by J. Fennel Berger, assistant manager of sales, and F. Clifford Peet, superintendent of production.

Roebling recently has installed new looms, crimping machinery and other manufacturing equipment.

### Program of Personnel Training for Employes Begun by National Supply

The National Supply Company is inaugurating a personnel training program for all its manufacturing plants, sales and engineering departments, and company stores — first company-wide training plan in National supply history.

Dr. B. E. Warden

A. E. Walker, president of National Supply, has announced appointment of Dr. B. E. Warden, former dean of students and director of student personnel at Carnegie Institute of Technology, as the educational director, with headquarters in Pittsburgh.

The company training program will be extended not only to supervisory personnel in manufacturing divisions but also to employes in sales, engineering and manufacturing departments, and to personnel of National Supply's 100 stores in the oil fields and other areas.

A graduate of the University of Iowa, Dr. Warden was an instructor at the University of Kansas from 1927 to 1929, then joined the Carnegie Institute faculty as assistant professor of economics. In 1938 he was named adviser to men, the following year dean of men, and in 1940 organized the Division of Student Personnel and Welfare.

The Navy awarded Dr. Warden a letter of commendation for his service in 1944 and 1945, when he organized and administered the training of thousands of recruits and supervised the training and work of hundreds of instructors at San Diego.

## SQUEAKS from the BULL WHEEL

### Time to Take Time

The salesman's knock was answered by something beautiful.

"Ah, good morning, Madam. May I speak to your husband?"

"Sorry. He's away on business and won't be back for three weeks."

He took another long look at the gorgeous creature. "May I come in and wait?"

### Rare Commodity

"Waiter, this steak isn't very tender."

"If it's affection you wan't, sir, you'll have to speak to the cashier."

### Boredom, Perhaps

"Liquor, tobacco and other bad habits kill lots of people."

"Yeah, but what I want to know is, what kills all those people who don't have any bad habits?"

### Jumpy Business

Travelogue announcer (about kangaroos hopping about on the screen): "And here, folks, you see the natives of Australia."

Elderly lady: "Tch! Tch! And to think my niece married one!"

### Long, Long Trail

"Does your boy friend have ambitions?"

"Oh, yes, ever since he's been knee high."

### Hints for Householders

"I refused to marry Joe three months ago and he's been drunk ever since."

"That's what I call carrying a celebration too far."

### When Ladies Meet

"I don't think I look 30, do you, dear?"

"Not now, darling. But you used to."

### Two Too Many

"It's easy to write a play. First act, boy meets girl. Second act, they hold hands. Third act, they kiss."

"That's how I got arrested."

"What do you mean?"

"I wrote a five-act play."

### Practically Inseparable

"Did you say your husband was fond of those clinging gowns?"

"Yep. He likes for one to cling to me for about five years."

### Economical

"Is your wife economical?"

"Sometimes. She used only 30 candles on her fortieth birthday cake."

### Pardon It

"You are charged with beating your wife for the second time in a month. Liquor again?"

"No, your honor. She licked me this time."

### Fun at Home

Looking into a mirror he had just found, the Mountaineer said, "Well if it ain't my old pappy. I never knowed he had his picture took."

Leaning back against the tree, he soon dozed off and his suspicious wife slipped over to examine the mirror.

"Well," she exclaimed, looking into it, "so that's the old hag he's bin a-chasin'."

### Thrice Proven

A gentleman, on being informed that he was the proud father of triplets, was so overjoyed at the news that he rushed immediately to the hospital, where his wife and newly-acquired family were and dashed pell-mell into the room.

The nurse, being out at the time, was irritated upon her return and remonstrated with the father.

"Don't you know better than to come in here in germ-filled clothes? Why, you're not sterile."

"Lady, are you telling me?"

### Poet's Nook

With cooler weather, you must allow,
This thought's worth paying heed to;
The sweater girls wear sweaters now
Because they really need to.

### Finicky

A waiter in a very swanky restaurant was horrified to see one of the patrons washing his spoon in the fingerbowl. Calling the manager, they both hurried to the man's table.

"Why on earth are you washing your spoon in the fingerbowl?"

"For the perfectly good reason that I don't want to get ice cream all over my pocket."


Increase RESERVES AND PROFITS BY Secondary Recovery

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CABLE & STINE
WICHITA FALLS, TEXAS



WIPE SUCKER RODS CLEAN

Here's a compact Sucker Rod Wiper designed as Well Pullers wanted it. Short overall height, 4", just right height for wrenching rods. Weight complete, only 36#. Easy to handle, comes mounted on pony rod ready to be used, if so ordered. Tough, natural rubber wiping webs squeegee rod, box and square free of oil. No oil leaves hole or flips on crew... Rubbers stand enough pressure to take oil to tank or sump if well flows. Wipes any size rod, 5/8" to 1¼".

The Wiper Housing contains two rubber wiping elements. It is furnished complete to make up on all standard pumping tees. The Plain Cap type is shown above and the Table Plate Head model, below:

The cut away drawing shows sturdy construction of both types. The handy Table Plate Head holds rod tools and elevators.

*Write for Catalog 310, code names and complete specifications or see your Patterson-Ballagh man.*

Specify PATTERSON-BALLAGH
DIVISION OF BYRON JACKSON CO
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Durbin-Boomer F-1—2 swivels, 3/4, 1/2 or 1/2" chain
Durbin-Boomer F-2—2 swivels, 7/16, 1/2 or 5/8" chain

**Malleable Iron • Heat Treated • 5 Sizes**
MIDGET No. 1—1 swivel, 1/4" chain
DELTA No. 1—1 swivel, 5/16 or 3/8" chain
DIXIE No. 1—2 swivels, 1/2 or 1/2" chain
LONE STAR 1—2 swivels, 7/16, 1/2 or 5/8" chain
LONE STAR 2—2 swivels, 7/16, 1/2 or 5/8" chain

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Analysis of oil field brines, cores, gas, oil and minerals. Field gas testing. R. H. Fash, Vice President; Long Distance 138. 823½ Monroe Street, Fort Worth, Texas.

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Oil Field Brines, Waters and Cores
Complete Evaluation of Crude Oils

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Have You Checked

*The Trading Post?*

Turn Back to Page 88


## *Exploration in Wyoming Area Is Authorized by Krug*

Controlled exploration for oil and gas in an area immediately east of Jackson Hole National Monument in Wyoming and generally south of the Teton Wilderness area in Teton National Forest, Wyoming, was authorized last week by Secretary of the Interior J. A. Krug.

The Secretary's order withholds leasing privileges for oil and gas prospecting in the Teton Wilderness area of the Teton National Forest and generally required the "unit plan" of oil and gas development. Krug said that it is only because of a serious decline in new oil discoveries and the possible loss of publicly-owned oil resources by drainage through the development of intermingled private holdings that controlled exploration has been authorized. The restrictions on such leases, he added, constitute the best possible compromise between the nation's needs for fuel and the desirability of preserving the national asset which lies in the Jackson Hole wilderness.

## *Texas Well Permits*

Permits to drill 200 new wells in Texas were approved by the Texas Railroad Commission last week. There were 32 in North Texas and 51 in Southwest Texas. West Texas reported 35 permits, and there were 22 from East Central Texas, 23 from the Gulf Coast, 21 from West Central Texas and 16 from the Panhandle.

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For high boiler efficiency and low maintenance, investigate our feed water engineering service. Prevents scale formation . . . protects boiler from corrosion . . . prevents caustic embrittlement.

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**STANDCO BRAKE LINING**

For the easiest brake known. It feeds off evenly. Standco never scores brake rims. See Pages 3608-3613 Composite Catalog.

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as The OIL WEEKLY

# WORLD OIL

FOR THE DRILLING, PRODUCING, PIPE LINE INDUSTRY

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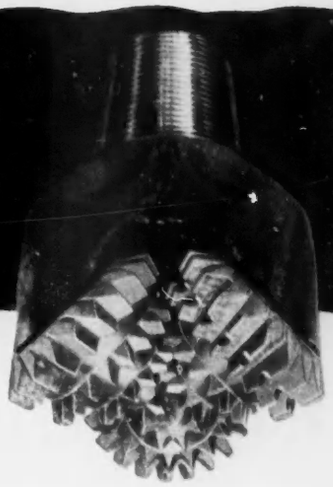

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**OWS**
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## FORTIFIED GAGE!

For maximum penetration in the harder non-abrasive formations, Hughes engineers "chalk up" another first with the Hughes OWS Tri-Cone Rock Bit.

Hughes Type OWS Rock Bits feature an abrupt widening of the gage surface of every heel tooth. This is a Hughes "Engineered Solution" which requires the use of special milling to provide greater thickness of HUGHESITE gage metal, a reinforcement rib, and retention of the gagé point during the application of HUGHESITE. Hughes fortified gage is your assurance of FULL-GAGE HOLE.

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# 45 WELLS REWORKED
# 45 SUCCESSFUL PLUG-BACKS

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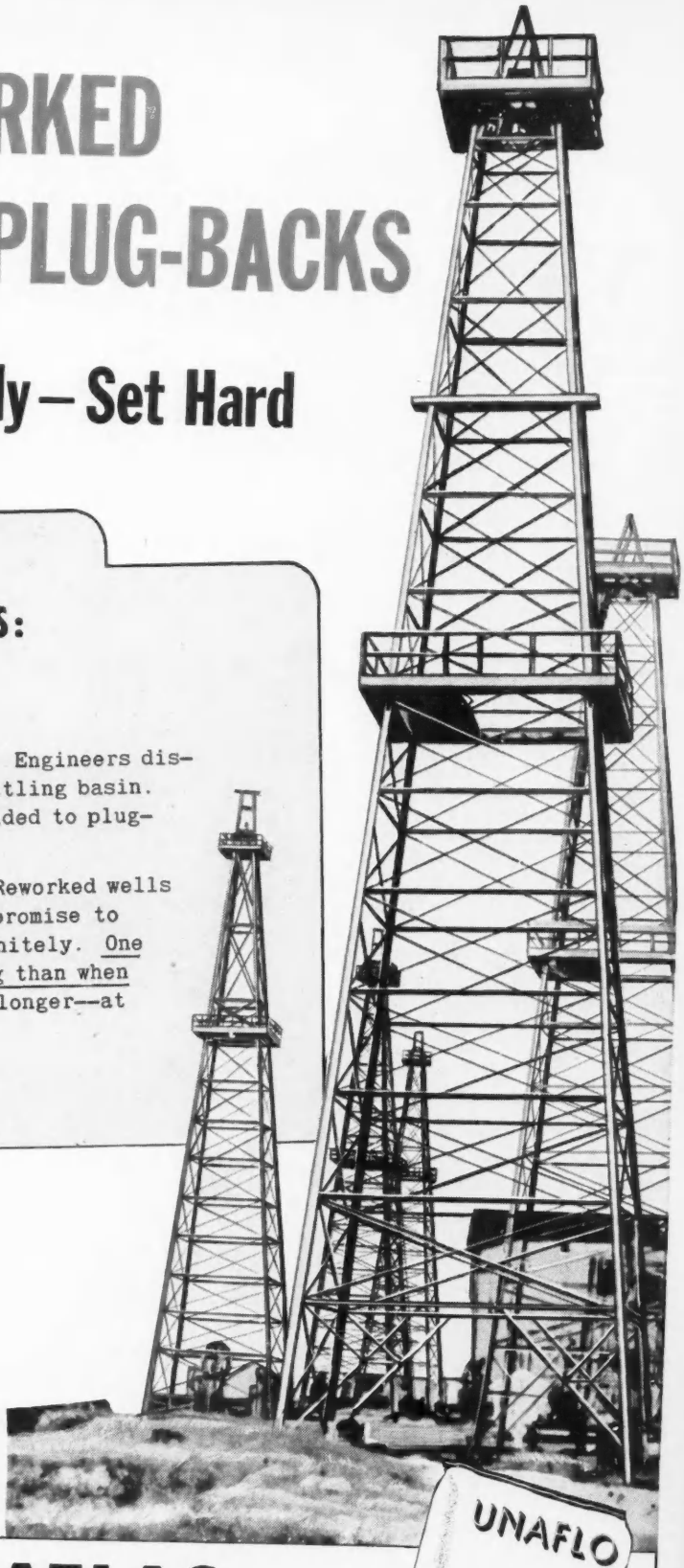
Texas Development.

Problem: Salt water showing in some wells. Engineers discarded ideas for building large lake as settling basin. Discarded plans for pipe-line to sea. Decided to plug-back with Unaflo.

Every one of 45 jobs proved successful. Reworked wells show only a small decrease in production—promise to continue producing high-gravity oil indefinitely. One well actually made more oil after cementing than when it was drilled in. All wells will produce longer—at lower cost.



WHETHER it's for cementing casings, squeezes or plug-backs, Unaflo gives you exactly what you need. It does not stiffen prematurely. Its retarded set keeps it fluid and pumpable under high temperatures, pressures and unforeseen delays. After the period of retardation, it sets normally to provide a hard, dense seal.

Send for further information.

WO-U-83

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**OIL-FIELD CEMENTS**

**Unaflo *Retarded* Oil-Well Cement**
*Resistant to Sulfate Waters*
**Atlas Portland Cement—Type I**

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*Resistant to Sulfate Waters*
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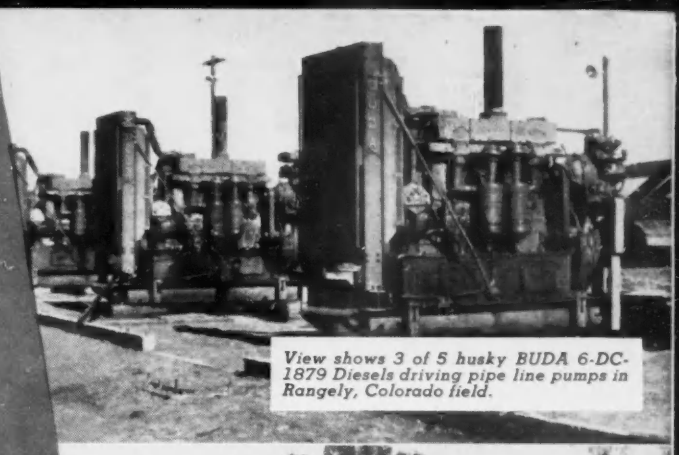
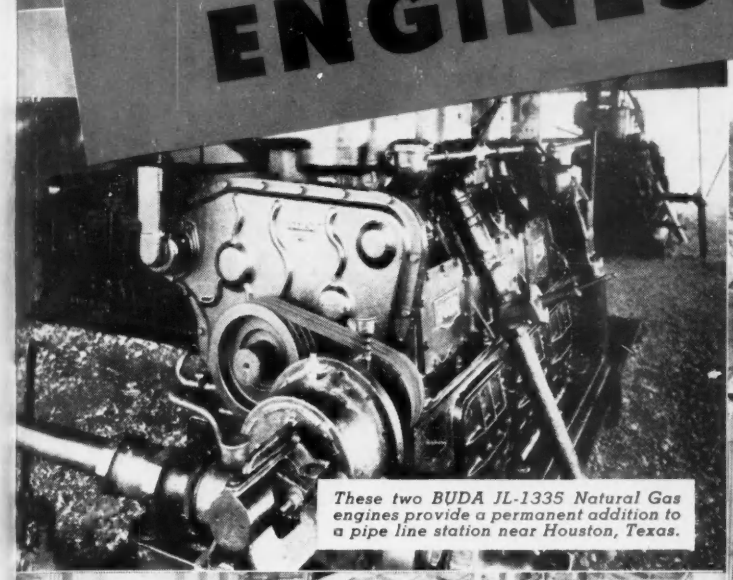
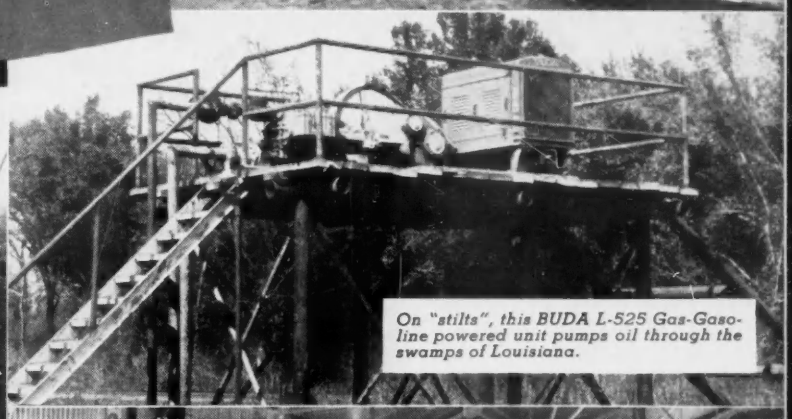
## Gas, Gasoline, Butane, Propane and Diesel ENGINES



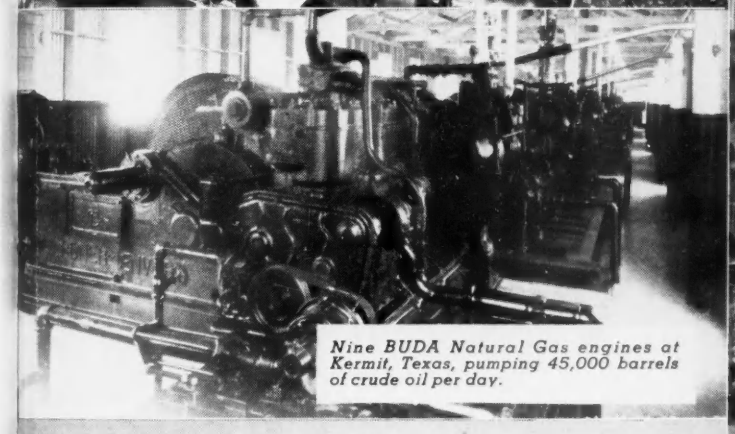
*View shows 3 of 5 husky BUDA 6-DC-1879 Diesels driving pipe line pumps in Rangely, Colorado field.*



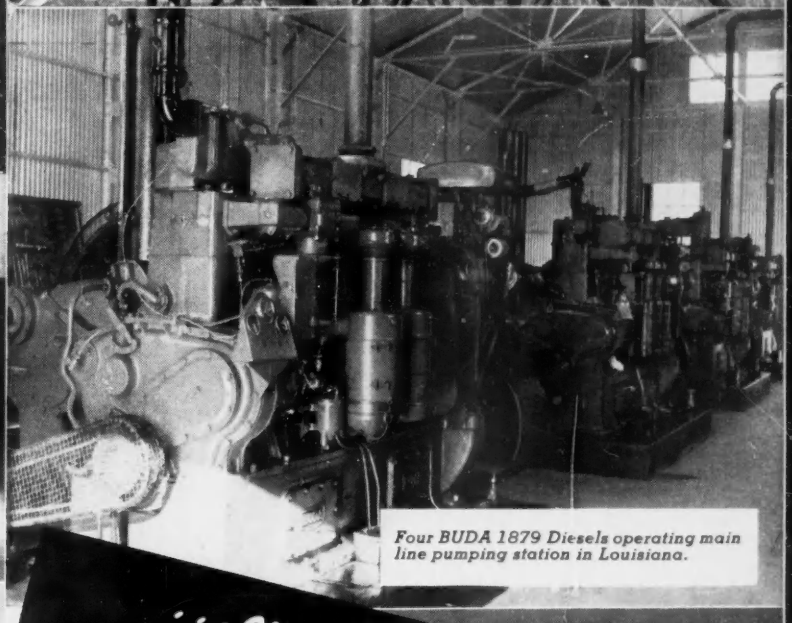
*These two BUDA JL-1335 Natural Gas engines provide a permanent addition to a pipe line station near Houston, Texas.*



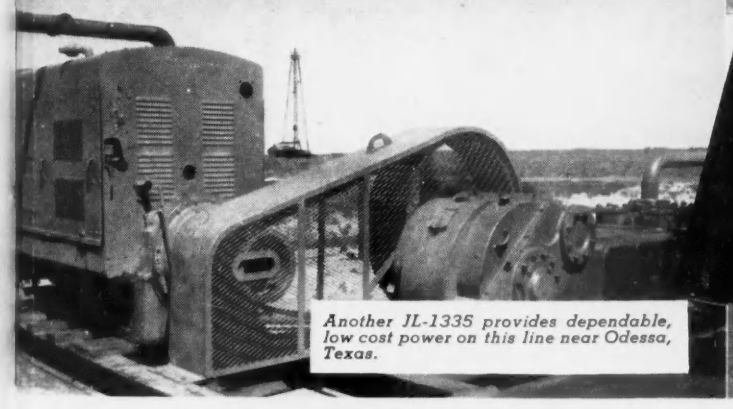
*On "stilts", this BUDA L-525 Gas-Gasoline powered unit pumps oil through the swamps of Louisiana.*



*Nine BUDA Natural Gas engines at Kermit, Texas, pumping 45,000 barrels of crude oil per day.*



*Four BUDA 1879 Diesels operating main line pumping station in Louisiana.*



*Another JL-1335 provides dependable, low cost power on this line near Odessa, Texas.*

*. . . over 26 years of leadership, providing*

**long term, low cost PIPE LINE PUMPING**

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*there's Buda . . .*

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Progressive Operators Install AMERICAN Slush Pump COMPOUNDING VALVES for

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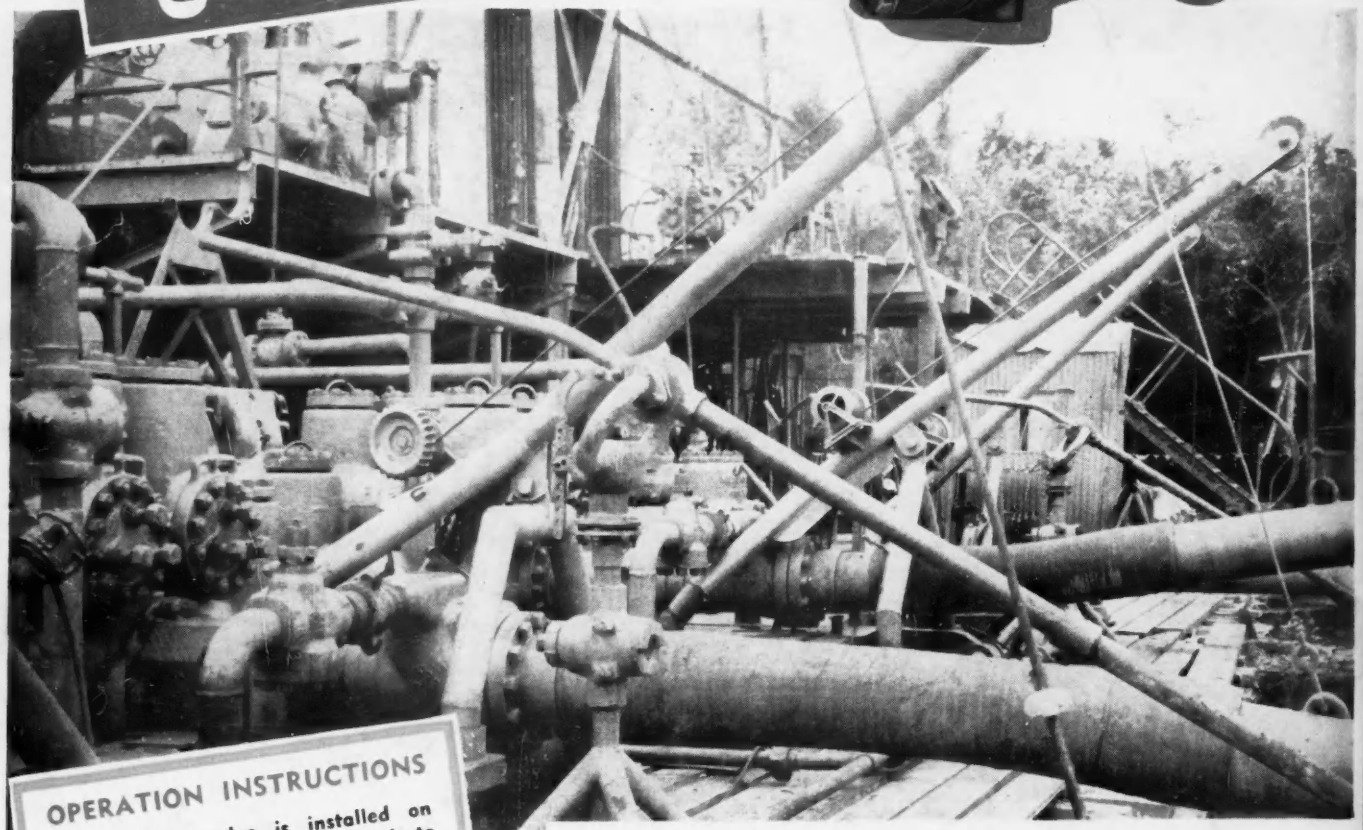

## OPERATION INSTRUCTIONS

Compounding valve is installed on suction line of the pump which is to handle compounding. A line is then connected from discharge of the other pump to the inlet of the compounding valve. This line should have a gate valve conveniently installed in it, as close to the pump as possible.

To compound pumps, shut down pump which does not have compound valve installed on it—close manifold valve on the same pump and open gate valve on line from its discharge to inlet of compound valve. Start up pumps. This sends discharge of the pump into the compound valve, automatically closes suction line to this pump and causes fluid to enter stand pipe at combined pressure of both pumps. Inlet connection on both size valves is 4-inch line pipe.

**Installation of our slush pump compounding valves shown above is on one of the largest and most modern drilling rigs in the Gulf Coast area! Installations like this prove that progressive operators get results by getting the best!**

- **Faster Compounding**
- **More Compact**
- **Always Ready**
- **Easily Operated**
- **Minimum of Replacement Parts**

**Above photo also shows the efficient use of American Slush Pump Suction Hoist on this installation!**

**AMERICAN**
**IRON & MACHINE WORKS CO.**
**OKLAHOMA CITY, OKLAHOMA**
Office, Houston, Texas
Export Office: 420 Lexington Ave., New York City, N.Y

*Remember, there is an AMERICAN service man in every active field!!*